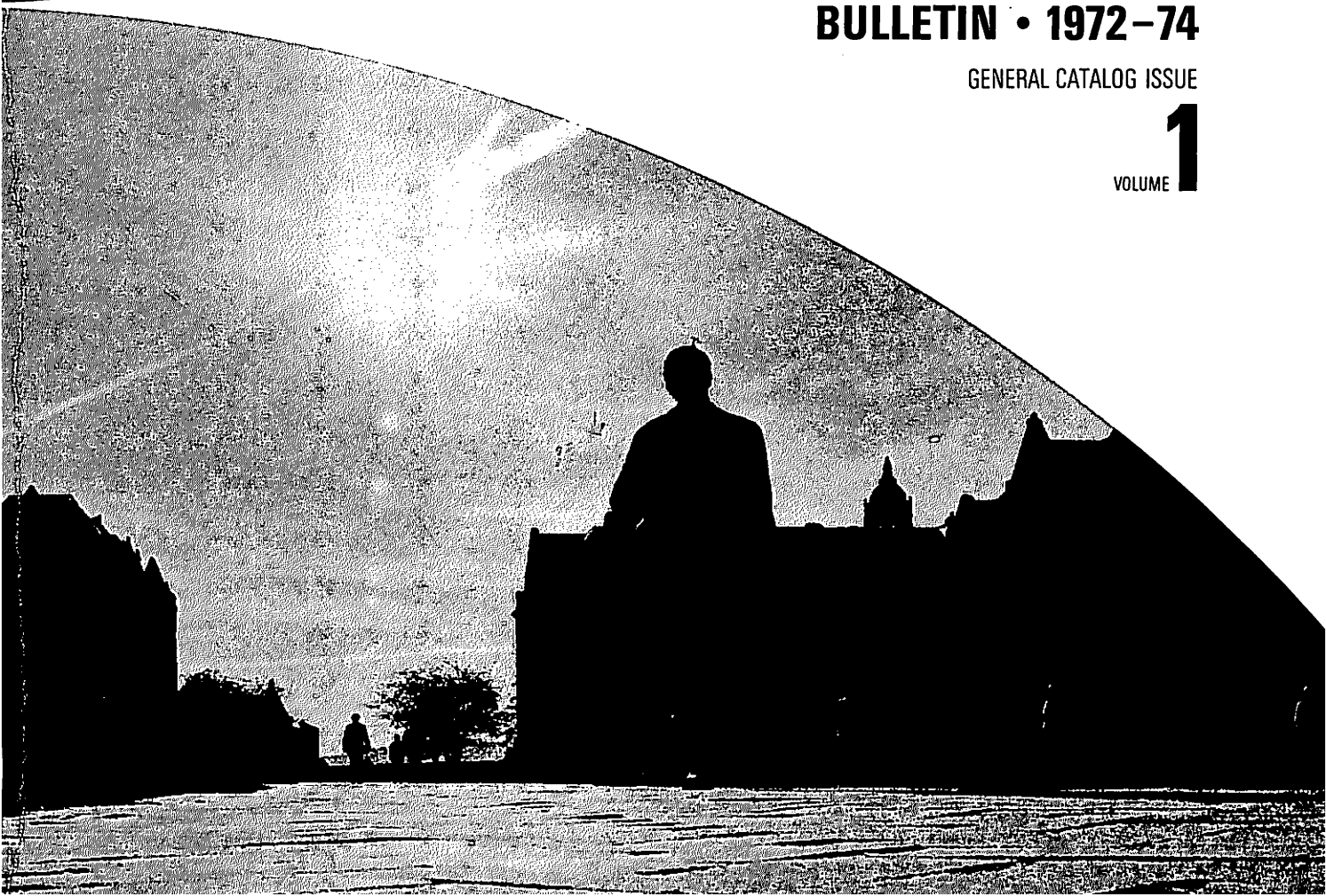


UNIVERSITY OF WASHINGTON
BULLETIN • 1972-74

GENERAL CATALOG ISSUE

VOLUME **1**



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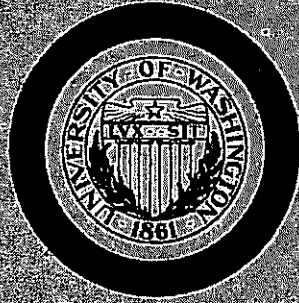
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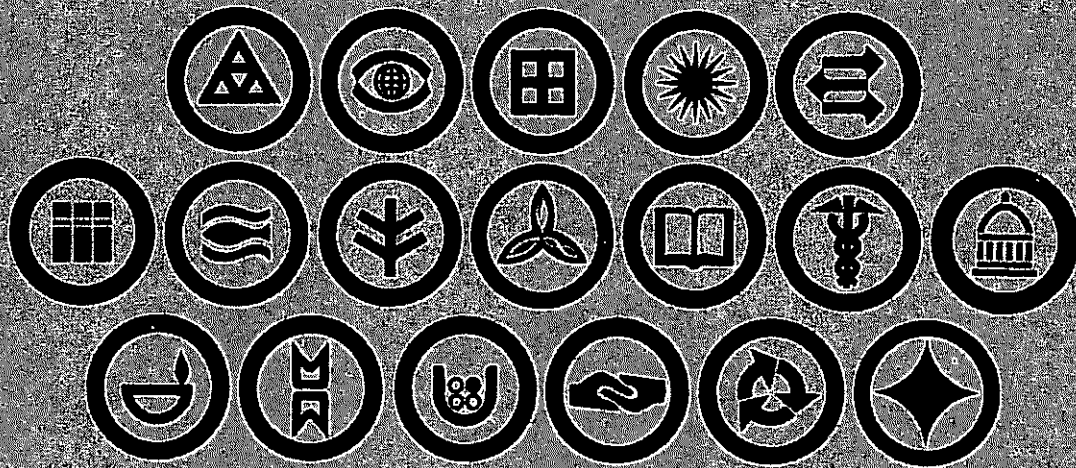
University of Washington
General Catalog
February 1977

Published monthly
March, August, and
winter when published
community of
Washington of the
city of Washington
class postage paid at
post office in
ington 98195

This general catalog
available for use
in public high schools
schools, colleges, and
universities. It is
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UNIVERSITY OF WASHINGTON



CONTENTS

4	ACADEMIC CALENDAR
9	GENERAL INFORMATION
25	UNDERGRADUATE EDUCATION
34	GRADUATE STUDY, THE GRADUATE SCHOOL, AND RESEARCH
59	CONTINUING EDUCATION
	<i>PROGRAMS OF STUDY</i>
63	COLLEGE OF ARCHITECTURE AND URBAN PLANNING
73	COLLEGE OF ARTS AND SCIENCES
166	SCHOOL OF BUSINESS ADMINISTRATION
176	COLLEGE OF EDUCATION
203	COLLEGE OF ENGINEERING
230	COLLEGE OF FISHERIES
240	COLLEGE OF FOREST RESOURCES
250	HEALTH SCIENCES
252	SCHOOL OF DENTISTRY
261	SCHOOL OF MEDICINE
283	SCHOOL OF NURSING
292	COLLEGE OF PHARMACY
297	SCHOOL OF PUBLIC HEALTH AND COMMUNITY MEDICINE
303	SCHOOL OF SOCIAL WORK
306	SCHOOL OF LAW
314	SCHOOL OF LIBRARIANSHIP
316	SCHOOL OF PUBLIC AFFAIRS
318	INTERDISCIPLINARY GRADUATE DEGREE PROGRAMS
332	RULES AND REGULATIONS
365	INDEX

ACADEMIC CALENDAR 1972-73

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

SPRING QUARTER, 1972

To assure consideration, completed admission applications must be received by the following closing dates:

New graduate students	January 1
All other new and former students	February 1*
Classes begin	March 27
Memorial Day holiday	May 29
Last day of instruction	June 3
Final examinations	June 5-9
Commencement	June 10

SUMMER QUARTER, 1972

To assure consideration, completed admission applications must be received by the following closing dates:

New graduate students	April 1
All other new and former students	May 15*
First-term classes begin	June 19
Independence Day holiday	July 4
First-term final examinations	July 19
Second-term classes begin	July 20
Second-term final examinations	August 18

AUTUMN QUARTER, 1972

To assure consideration, completed admission applications must be received by the following closing dates:

New graduate students	April 1
New students entering from high school	May 1*
All other new and former students	July 1*
Classes begin	September 25
Veterans and State Admission Day holiday	October 23
Thanksgiving recess	November 23 and 24
Last day of instruction	December 6
Final examinations	December 7-14

WINTER QUARTER, 1973

To assure consideration, completed admission applications must be received by the following closing dates:

New graduate students	October 1
All other new and former students	November 1*
Classes begin	January 2
Washington's Birthday holiday	February 19
Last day of instruction	March 10
Final examinations	March 12-16

*Should University undergraduate enrollment quotas be filled prior to the application closing date, it may not be possible to offer you enrollment even though you are scholastically eligible for admission.

1973-74

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

SPRING QUARTER, 1973

To assure consideration, completed admission applications must be received by the following closing dates:

New graduate students	January 1
All other new and former students	February 1*
Classes begin	March 26
Memorial Day holiday	May 28
Last day of instruction	June 2
Final examinations	June 4-8
Commencement	June 9

SUMMER QUARTER, 1973

To assure consideration, completed admission applications must be received by the following closing dates:

New graduate students	April 1
All other new and former students	May 1*
First-term classes begin	June 18
Independence Day holiday	July 4
First-term final examinations	July 18
Second-term classes begin	July 19
Second-term final examinations	August 17

AUTUMN QUARTER, 1973

To assure consideration, completed admission applications must be received by the following closing dates:

New graduate students	April 1
New students entering from high school	May 1*
All other new and former students	July 1*
Classes begin	October 1
Veterans and State Admission Day holiday	October 22
Thanksgiving recess	November 22 and 23
Last day of instruction	December 12
Final examinations	December 13-20


WINTER QUARTER, 1974

To assure consideration, completed admission applications must be received by the following closing dates:

New graduate students	October 1
All other new and former students	November 1*
Classes begin	January 7
Washington's Birthday holiday	February 18
Last day of instruction	March 16
Final examinations	March 18-22

*Should University undergraduate enrollment quotas be filled prior to the application closing date, it may not be possible to offer you enrollment even though you are scholastically eligible for admission.

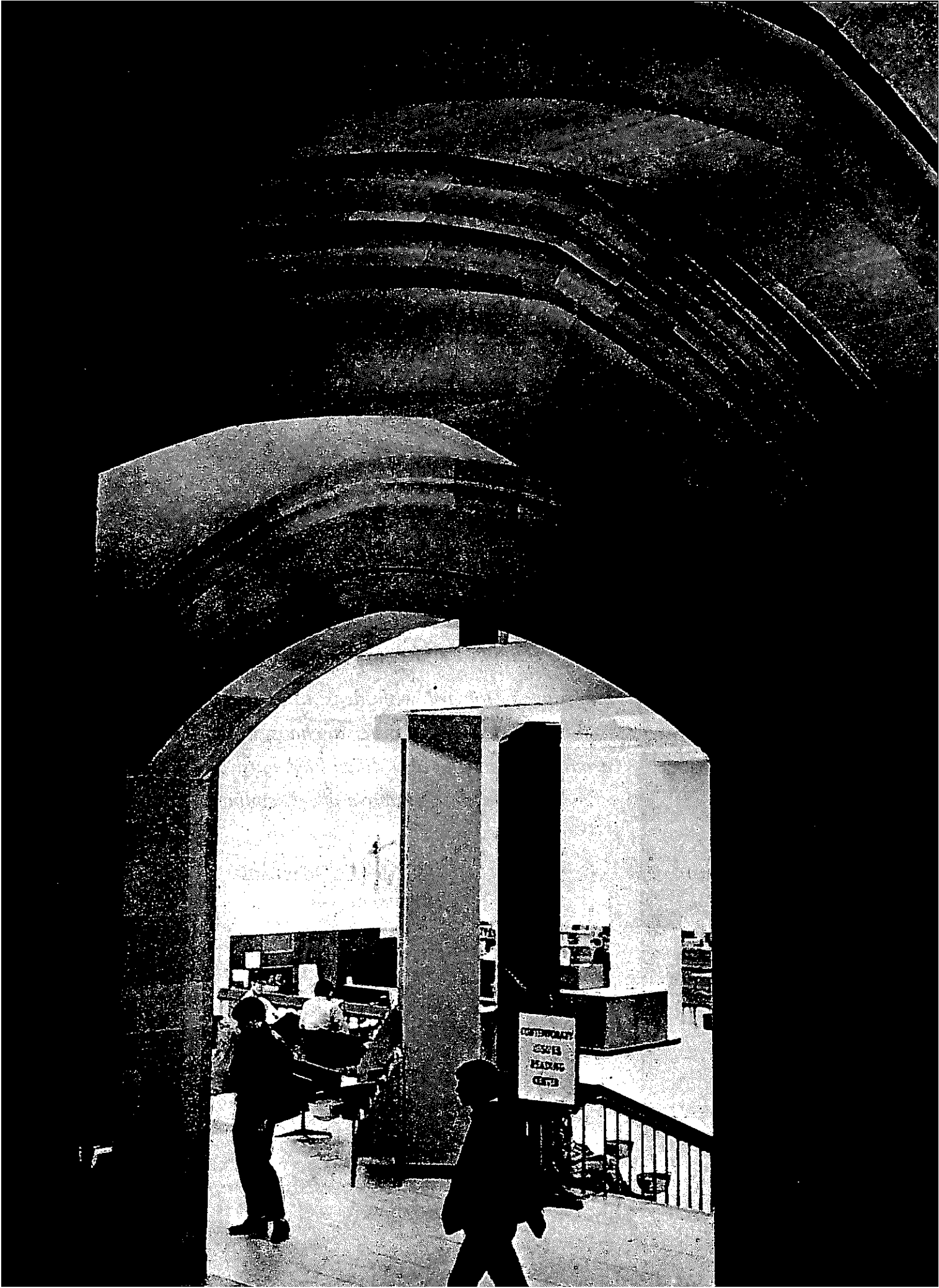




*It is the primary task of a great university
to attract and to cultivate the intellectual powers of
students who will be competent to engage successfully
in the strenuous race for ideas which marks especially
our time and upon which order, freedom,
human welfare, and peace depend.*

*The capacity to work with ideas, to use abstractions,
to find a degree of order in chaos, to reason
around corners and over difficulties, must be found,
stimulated, and above all, disciplined.*

Charles E. Odegaard
President





GENERAL INFORMATION

The University of Washington was founded in 1861 on a ten-acre knoll in what is now downtown Seattle, and was moved in 1895 to its present 660-acre site on the shores of Lake Washington. Now offering instruction in more than two hundred academic disciplines, the "University of a Thousand Years" has entered its second century of service.

The University of Washington's enrollment for Autumn Quarter 1971 exceeded 33,000.

Enrollment for Autumn Quarter 1970 was 32,202. Of this number 25,118 were undergraduates; the remainder were in professional and graduate programs. More than three-fourths of the undergraduates enter as freshmen from Washington high schools or as transfer students from Washington community colleges or other colleges and universities in the state. These students come from every county in Washington and represent the smallest as well as the largest communities. The remaining students enter from high schools, colleges, and universities from every state and territory of the United States and from foreign countries. During the year 1970-71, 1,250 noncitizens from approximately ninety countries have enrolled, ranking the University eleventh in the nation in size of foreign student population.

The majority of students who enter the University as freshmen are from the top one-third to one-fifth of their high school graduating class. The grade-point

average for the Freshman Class entering in Autumn Quarter 1970 was 3.19.

In the belief that a state university should be just in meeting the educational needs of the young people of all racial groups within the state, special efforts are being made to encourage the application of minority students who are judged to show a reasonable likelihood of success.

Women comprised 38.8 per cent of the student population in Autumn Quarter 1970. Married students numbered 3,850 in the undergraduate program and 4,972 in graduate study.

The Faculty

The faculty of the University includes the president, vice presidents, provost, vice provosts, deans, professors, associate professors, assistant professors, instructors, research associates, and lecturers.

The University attracts faculty members from colleges and universities throughout the world. A survey for the years 1969-71 indicated that 55 per cent of new faculty members, ranking as assistant professors or above, came from the midwest and the eastern seaboard of the United States; 19 per cent from the state of Washington; 15 per cent from California; 8 per cent from other areas of the United States; and 3 per cent from foreign universities. In 1970, the full-time aca-

demographic staff of the University numbered approximately twenty-two hundred.

Accreditation

The University of Washington is accredited by the Northwest Association of Secondary and Higher Schools and is a member of the Association of American Universities. Individual schools and colleges are members of the various accrediting associations in their respective fields.

PROGRAMS OF STUDY

At the undergraduate level, the freshman or transfer student generally enrolls in the college that offers his chosen major. If he has not selected a major, he may enroll in the College of Arts and Sciences as a pre-major. Undergraduates preparing for professional study in fields such as architecture, business administration, dental hygiene, dentistry, education, medical technology, medicine, occupational therapy, physical therapy, prosthetics and orthotics, and urban planning may complete preliminary work in the preprofessional programs offered within the College of Arts and Sciences. The baccalaureate degree is required for admission to the Graduate School and the School of Law.

The programs of study in a variety of fields not only train students for the professions and occupations but also prepare them to contribute to the culture and progress of society. The colleges and schools and the principal fields of study at the University of Washington are listed here. Most colleges, schools, and departments offer both graduate and undergraduate courses.

College of Architecture and Urban Planning

Architecture
Building Construction
Landscape Architecture
Urban Planning

College of Arts and Sciences

*African Studies
American Indian Studies
Anthropology
Art
Asian Languages and Literature
Asian Studies
Astronomy
Atmospheric Sciences
Biology
Black Studies
Botany
Chemistry

*Chicano Studies
Classics
Communications
Comparative Literature
*Dance
Drama
Economics
English
Environmental Health
*General and Interdisciplinary Studies
General Studies
†Genetics
Geography
Geological Sciences
Germanic Languages and Literature
History
Home Economics
Institute for Comparative and Foreign Area Studies
Latin American Studies
†Linguistics
Mathematics
Microbiology
Music
Near Eastern Languages and Literature
Oceanography
Philosophy
Physical and Health Education
Physics
Political Science
*Premajor and Preprofessional Programs
Psychology
Romance Languages and Literature
Russia and East Europe Studies
Scandinavian Languages and Literature
Slavic Languages and Literature
Social Welfare
Society and Justice
Sociology
Speech
Zoology

School and Graduate School of Business Administration

Accounting
*Administrative Theory and Organizational Behavior
*Business Economics
Business, Government, and Society
*Business Policy
Finance
International Business
Marketing
*Operations and Systems Analysis
Personnel and Industrial Relations



Quantitative Methods
 *Risk and Insurance
 Transportation
 Urban Development

College of Education

Educational Administration
 Educational Curriculum and Instruction
 Educational Psychology
 Higher Education
 Educational Policy Studies
 Independent Study, Research, and Field Experiences
 Special Education

College of Engineering

Aeronautics and Astronautics
 Bioengineering
 Chemical Engineering
 Civil Engineering
 Electrical Engineering
 *Humanistic-Social Studies
 Industrial Engineering
 Mechanical Engineering
 Mining, Metallurgical, and Ceramic Engineering
 †Nuclear Engineering
 Ocean Engineering

College of Fisheries

Fishery Biology
 Food Science
 Quantitative Science
 Wildlife Sciences

College of Forest Resources

Forest Engineering
 Forest Management
 Forest Sciences
 Outdoor Recreation
 Pulp and Paper Technology
 Quantitative Science
 Wildlife Sciences
 Wood and Fiber Science

School of Dentistry

Community Dentistry
 Continuing Dental Education
 Dental Hygiene
 Dentistry
 Endodontics
 Graduate Dental Education
 Oral Biology
 Oral Diagnosis and Treatment Planning
 Oral Surgery

Orthodontics
 Pedodontics
 Periodontics
 Prosthodontics
 Restorative Dentistry

School of Medicine

Anesthesiology
 Human Biology
 Biochemistry
 Bioengineering
 Biological Structure
 Biomedical History
 Experimental Animal Medicine
 Family Medicine
 Laboratory Medicine
 Medical Practice
 Medical Technology
 Medicine
 Microbiology
 Neurological Surgery
 Obstetrics and Gynecology
 Occupational Therapy
 Ophthalmology
 Orthopedics
 Otolaryngology
 Pathology
 Pediatrics
 Pharmacology
 Physical Therapy
 Physiology and Biophysics
 Prosthetics and Orthotics
 Psychiatry
 Radiology
 Rehabilitation Medicine
 Surgery
 Urology

School of Nursing

Comparative Nursing Care Systems
 Family and Community Nursing
 Maternal and Child Nursing
 Physiological Nursing
 Psychosocial Nursing

College of Pharmacy

Pharmaceutical Chemistry
 Pharmacognosy
 Pharmacy and Pharmacy Administration

*Elective or area programs neither leading to a degree, nor for which baccalaureate degrees are authorized.

†Graduate degrees only. Certain courses open to undergraduates.

**School of Public Health and
Community Medicine**

Biostatistics
Environmental Health
Epidemiology and International Health
Health Services
Pathobiology

†School of Social Work

School of Law

†School of Librarianship

†Graduate School of Public Affairs

Public Administration
Public Policy

***Reserve Officers Training Corps**

Aerospace Studies
Military Science
Naval Science

Graduate School

Advanced degree subject matter fields in the Graduate
School include the following:

†Aeronautics and Astronautics
†Anthropology
Architecture
Art
†Art History
†Asian Languages and Literature
†Astronomy
†Atmospheric Sciences
†Biochemistry
†Biological Structure
Biology
†Biomathematics
Biomedical History
†Botany
†Business Administration
†Chemical Engineering
†Chemistry
†Civil Engineering
†Classics
†Communications
†Comparative Literature
†Comparative Physiology
†Computer Science
Dentistry
Drama

†Drama Arts

East Asian Studies

†Economics

†Education

†Electrical Engineering

†English

†Epidemiology and International Health

†Fisheries

†Forest Resources

†Genetics

†Geography

†Geological Sciences

†Geophysics

†Germanic Languages and Literature

†History

Home Economics

†Law

Librarianship

†Linguistics

†Mathematics

†Mechanical Engineering

†Microbiology

†Mining, Metallurgical, and Ceramic Engineering

†Music

Near Eastern Languages and Literature

†Nuclear Engineering

Nursing

†Oceanography

Oral Biology

†Pathology

†Pharmacology

†Pharmacy

†Philosophy

Physical and Health Education

†Physics

†Physiology and Biophysics

†Physiology Psychology

†Political Science

†Psychology

Public Affairs

Public Health Studies

Radiological Sciences

Rehabilitation Medicine

†Romance Languages and Literature

Russia and East Europe Studies

†Scandinavian Languages and Literature

†Slavic Languages and Literature

Social Work

†Sociology

†Speech

Surgery

†Urban Planning

†Zoology



DEGREES

The University of Washington grants the following degrees upon satisfactory completion of appropriate programs of study in the departments, schools, and colleges:

Undergraduate Degrees

Bachelor of Arts	B.A.
Bachelor of Arts in Business Administration	B.A.B.A.
Bachelor of Arts in Environmental Design	B.A.E.D.
Bachelor of Arts in Urban Planning	B.A.Urb.Plan.
Bachelor of Fine Arts	B.F.A.
Bachelor of Landscape Architecture	B.L.Arch.
Bachelor of Music	B.Mus.
Bachelor of Science	B.S.
Bachelor of Science in Aeronautics and Astronautics	B.S.A.&A.
Bachelor of Science in Building Construction	B.S.B.C.
Bachelor of Science in Ceramic Engineering	B.S.Cer.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.
Bachelor of Science in Engineering	B.S.E.
Bachelor of Science in Fisheries	B.S.Fish.
Bachelor of Science in Forest Resources	B.S.For.
Bachelor of Science in Industrial Engineering	B.S.I.E.
Bachelor of Science in Mechanical Engineering	B.S.M.E.
Bachelor of Science in Medical Technology	B.S.Med.Tech.
Bachelor of Science in Metallurgical Engineering	B.S.Met.E.
Bachelor of Science in Mining Engineering	B.S.Min.E.
Bachelor of Science in Nursing	B.S.Nurs.
Bachelor of Science in Occupational Therapy	B.S.Occ.Therapy
Bachelor of Science in Pharmacy	B.S.Pharm.
Bachelor of Science in Physical Therapy	B.S.Phys.Therapy
Bachelor of Science in Prosthetics and Orthotics	B.S. in P.&O.

Graduate Degrees

Master of Arts	M.A.
Master of Arts for Teachers	M.A.T.
Master of Arts in Home Economics	M.A.H.Ec.
Master of Science	M.S.
Master of Science in Aeronautics and Astronautics	M.S.A.&A.
Master of Science in Ceramic Engineering	M.S.Cer.E.
Master of Science in Ceramics	M.S.Cer.
Master of Science in Chemical Engineering	M.S.Ch.E.
Master of Science in Civil Engineering	M.S.C.E.

Master of Science in Dentistry	M.S.Den.
Master of Science in Electrical Engineering	M.S.E.E.
Master of Science in Engineering	M.S.E.
Master of Science in Home Economics	M.S.H.Ec.
Master of Science in Mathematical Statistics	M.S.Math.Stat.
Master of Science in Mechanical Engineering	M.S.M.E.
Master of Science in Metallurgical Engineering	M.S.Met.E.
Master of Science in Metallurgy	M.S.Met.
Master of Science in Physical Education	M.S.Phys.Ed.
Master of Science in Preventive Medicine	M.S.Prev.Med.
Master of Science in Radiological Sciences	M.S.Rad.Sci.
Master of Aeronautics and Astronautics	M.A.&A.
Master of Architecture	M.Arch.
Master of Business Administration	M.B.A.
Master of Communications	M.C.
Master of Comparative Law	M.C.L.
Master of Education	M.Ed.
Master of Electrical Engineering	M.E.E.
Master of Fine Arts	M.F.A.
Master of Forest Resources	M.F.R.
Master of Laws	L.L.M.
Master of Law Librarianship	M.Law Libr.
Master of Librarianship	M.Libr.
Master of Music	M.M.
Master of Nursing	M.N.
Master of Occupational Therapy	M.O.T.
Master of Public Administration	M.P.A.
Master of Social Work	M.S.W.
Master of Speech Pathology and Audiology	M.Sp.Path.&Aud.
Master of Urban Planning	M.U.P.
Doctor of Arts	D.A.
Doctor of Education	Ed.D.
Doctor of Musical Arts	D.M.A.
Doctor of Philosophy	Ph.D.

Dental, Law, and Medical Degrees

Doctor of Dental Surgery	D.D.S.
Doctor of Medicine	M.D.
Juris Doctor	J.D.

Undergraduate programs and degree requirements are described in the *Undergraduate Education* section.

Graduate degree requirements are described in the section on *Graduate Study*. For detailed information

*Elective or area programs neither leading to a degree nor for which baccalaureate degrees have been authorized.

†Graduate degrees only. Certain courses open to undergraduates.

‡Indicates doctoral program.

about the programs of study and requirements in the colleges, schools, and departments, see the sections describing each.

Sessions

University instruction is offered during three quarters of approximately eleven weeks each during the Autumn, Winter, and Spring Quarters, and for nine weeks during the Summer Quarter. Autumn Quarter begins in September and ends before the Christmas holidays; Winter Quarter continues from early January until the third week in March; and Spring Quarter extends from late March until the middle of June.

Summer Quarter

The opportunities for study during Summer Quarter are comparable to those of the regular school year, except that the number of courses offered is not as large. A wide selection of courses in most major fields is available to graduate and undergraduate students pursuing degree programs on a year-around basis, as well as to teachers and other summer-only students seeking to broaden, intensify, or refresh their subject matter competence. Freshman students entering from high school are encouraged to begin their college work in the summer. Through the University's Office of High School Relations, enrollment in summer courses may be arranged under certain circumstances for specially qualified students who have not yet completed high school.

Admission requirements for Summer Quarter are the same as for any other quarter, and credits earned are evaluated as residence credits. Application deadlines should be carefully observed. The Summer Quarter fees closely parallel those of a regular quarter; there is no additional fee for nonresidents during the summer. A separate fee schedule applies to medical and dental students.

Admitted students may register for either day or evening credit courses, or for a combination of day and evening credit courses on the basis of a single fee schedule. Part-time fees are charged in accordance with the number of credits for which the student is registered. A complete listing of both graduate and undergraduate courses available during Summer Quarter is published in the *Summer Quarter Bulletin*.

For further information concerning the summer program, application deadlines, and fees, write for the *Summer Quarter Bulletin*, or address inquiries to the Summer Quarter Office, 303 Lewis Hall, University of Washington, Seattle 98195.

Continuing Education

For information concerning independent study, evening classes, and other programs in Continuing Education, see the *Continuing Education* section.

THE CAMPUS

The University of Washington's campus—660 acres of trees, landscape, and buildings—is located on the shores of Lake Washington and has long been considered one of the most attractive in the nation. Many different species of trees, shrubs, and flowers add beauty to the campus. The present campus has a physical plant of about one hundred permanent buildings, including a modern, fully equipped research and teaching hospital which forms a portion of the Health Sciences complex located at the southern end of the campus.

The major buildings in which the academic activities are centered form the central portion of the campus; student housing facilities are distributed around the periphery. The extensive athletic plant, playing fields, and recreational areas are situated on the campus as are the botanical and drug-plant gardens and a 200-acre arboretum which contains thousands of varieties of trees, plants, and shrubs from all over the world.

University Libraries

The University of Washington has been fortunate in amassing a fine collection of library materials essential to high quality education. The University Library system, consisting of the Suzzallo Library, the Undergraduate Library, and 18 branch libraries, contains over 1,880,000 volumes; 325,000 research reports; 34,202 current serial subscriptions; as well as numerous maps, newspapers, microfilms, manuscripts, and countless state, federal, foreign, and international government documents.

The largest aggregation of books and materials is housed in the Suzzallo Library. It is there that students concerned with investigation in the atmospheric sciences, biology, botany, geological sciences, humanities, and the social sciences, find extensive library resources. Rare books, manuscripts, and a definitive collection of materials relating to the Northwest are also available in the Suzzallo Library.

Particularly important for all undergraduates is the Undergraduate Library. Its 110,000 volumes include commonly used reference works, books for assigned and collateral reading, as well as books and magazines for general reading. A media center provides audio-visual facilities for course-related and recreational pro-



grams. The undergraduate in any academic field will find in the Undergraduate Library nearly any book he is likely to need, except when he is doing a specialized project.

Most books in the Suzzallo Library and in the branch libraries are in open shelf collections to which students have direct access. Instead of many formal reading rooms, informal study areas are located conveniently within the book collections throughout the building. Librarians assigned to each collection or service unit assist students in the location and use of materials.

The 18 branch libraries consist of books and periodicals useful for work in various disciplines and are situated near the classrooms and laboratories of each discipline. Branch libraries in the sciences include Chemistry-Pharmacy, Engineering, Fisheries-Oceanography, Forest Resources, Health Sciences, Mathematics Research, and Physics. Libraries in other disciplines include Architecture and Urban Planning, Art, Business Administration, Drama, Far Eastern Studies, Geography, Law, Music, Philosophy, Political Science, and Social Work.

The University of Washington Library system participates in many regional and national bibliographic enterprises. The Pacific Northwest Bibliographic Center, a library corporation, maintains in the Suzzallo Library a union card catalog of over 3,750,000 author entries from forty libraries in the Pacific Northwest. This catalog is an aid to locating uncommon books from other library collections that may be required by faculty, researchers, and advanced students.

Museum

The Thomas Burke Memorial Washington State Museum, located at the northwest corner of the campus, houses creative displays of anthropology and natural history.

University Theatres

The School of Drama operates three theatres: The Glenn Hughes Playhouse with its thrust stage; the Penthouse Theatre, the first theatre-in-the-round built in America; and the Showboat Theatre, fashioned after a turn-of-the-century floating showboat with its proscenium stage. Faculty and student-directed plays are presented during the academic year, and range in type from classics to musicals.

Henry Art Gallery

The Henry Art Gallery brings to the campus and the community exhibitions of contemporary and historical work in all media of local, national, and international

significance. The program also includes films, lectures, music, and multi-media performances. The Archives of Northwest Art are housed in the Gallery, as well as a small but distinguished collection of European and American paintings and prints, and contemporary American and Japanese ceramics. Formed about four years ago, the Henry Gallery Association offers membership to students, faculty, and the community for the purpose of supporting the multifaceted program that has been traditionally funded by the state of Washington. The Gallery is open without charge to the public every day except Monday.

The Center for Asian Arts

The Center for Asian Arts, with administrative offices in 131 Art Building, initiates new programs concerned with the arts of Asia which involve both teaching and research. As these programs become established they are assigned to the appropriate departments or schools in the colleges of Architecture and Urban Planning and Arts and Sciences. In cooperation with the appropriate departments and the Office of Lectures and Concerts, the Center gives performances, arranges exhibits, and organizes symposia and workshops.

STUDENT HOUSING

Students are free to make their own housing arrangements, and they are urged to select the type that will best serve their academic and personal needs.

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. Students should consider living in the residence halls during some part of their University career, particularly when they first arrive on campus.

Residence Halls

Residence hall accommodations for men and women at the University of Washington are available in a variety of types, including four coeducational buildings. All are located within walking distance to campus classrooms and laboratory buildings. Except for McMahon, the halls operate with active student government organizations in "houses" of from fifty to a hundred and twenty students each. Preference in assignment to McMahon Hall is given to students of at least Junior Class standing or age twenty or older.

Most rooms are planned for double occupancy and are furnished with twin beds and individual desks and

wardrobes. Attractive dining areas, study rooms, kitchenettes, and laundry rooms have been included for student comfort and convenience. Ample study and recreation areas, including lounges and game areas, are provided in all halls. In most halls 19 meals per week are included in the board and room charges. At least one hall has optional meal programs offering 10 and 14 meals per week.

For information about special language programs conducted in the residence halls, refer to the material under the heading "Special Living Groups."

Contact the Housing and Food Services Office, 301 Schmitz Hall, 1400 NE Campus Parkway, Seattle Washington 98195, for reservations or further information.

University Housing for Married Students

The University operates a variety of housing accommodations, though limited in number, for married students with and without children. Students with limited financial resources have initial priority in assignment to vacancies as they occur. The following schedule of assignment priorities, in descending order from the highest to the lowest, has been adopted for students who meet the basic income criteria:

1. Students who are members of the University's Educational Opportunity Program (EOP)
2. (a) Women who are single parents and have dependent children, and (b) men who are single parents and have dependent children
3. Students with special housing problems, i.e., physically handicapped students, foreign students, or others with extreme personal or financial hardship
4. All other students

For further information about housing facilities, income schedule, and application procedure, please write to the Housing and Food Services Office, 301 Schmitz Hall, 1400 NE Campus Parkway, Seattle, Washington 98195. The Office also maintains listings of private housing facilities available off campus (see "Privately Operated Accommodations").

Union Bay Village Nursery School

Day care with nursery school and a kindergarten program for thirty-two children from three to six years of age is available at the Union Bay Nursery School. At least one of the parents must be a student, faculty, or staff member. The nursery is located near campus, in a building provided by the University, and is independently operated by students and staff members. Further

information may be obtained by writing directly to the Nursery School, 3900 Union Bay Circle, Seattle, Washington 98105, or by calling LA 4-0988.

Privately Operated Accommodations

Listings of off-campus rental properties such as rooming and boarding houses, housekeeping rooms, apartments, and houses are maintained in the Housing and Food Services Office, 301 Schmitz Hall, for the convenience of single and married students. The University does not inspect these accommodations and, therefore, students and parents must accept full responsibility for making a selection. Because these listings change so frequently they cannot be mailed out and must be consulted in person.

Fraternities and Sororities

Twenty sororities and 30 fraternities own and operate complete living facilities near the University campus. Members either live in the chapter houses or, as commuters living at home, have use of the facilities. These living groups conduct educational, social, recreational, and cultural activities, and place particular emphasis on study programs for new students.

Fraternities and sororities are granted a broad degree of self-government. However, the University makes available, through the Office of Student Affairs, staff members to advise house leaders on all phases of chapter life and operation. Activities of the fraternities and sororities are coordinated and governed by the student Interfraternity Council and Panhellenic Association, respectively. These organizations also coordinate and supervise the rush programs for their member fraternities and sororities.

For additional information write to: the University of Washington Panhellenic Association or Interfraternity Council, Student Union Building, Seattle, Washington 98195.

Men's Cooperative

Allerlei House, a men's cooperative, provides economical living facilities for a small number of men students who share work and expenses. This residence, located one block from campus at 4632 22nd NE, operates as a recognized University organization. Please write directly for further information.

Religious Living Units

Faith and Life Community (Inter-faith), University Christian Union Women's House and University Christian Union Men's House (Protestant), and Baptist Student Center also provide housing for students at the



University of Washington. Their primary purpose is to offer an environment consistent with religious ideals and to encourage maximum scholastic achievement.

Special Living Groups

Russian House is a living group for both men and women interested in learning the Russian language. Since Russian is spoken at all times among residents, the student should have some familiarity with the language before applying for admission to the House program. For further information write to the University of Washington, Russian House Faculty Adviser, Department of Slavic Languages and Literature, Seattle, Washington 98195.

Living-Language Programs in French, German, Japanese, and Spanish are conducted in coeducational residence halls by students in cooperation with language departments. Members are grouped according to language interests and have most meals together. Candidates for the French, Japanese, and Spanish Programs must have at least second-year standing and be nineteen years of age or older. For further information, please write to the department concerned.

In addition to language houses, other special interest groups or "communities" occupy common areas in the halls. These communities have a particular focus (e.g., ecology, the behavioral sciences, innovative education), and the groups and their special interests vary from year to year.

The Lower Division Residential Program, under the sponsorship of the College of Arts and Sciences, is also housed in the residence halls. Its focus is on undergraduate education and, therefore, is for freshmen and sophomores only. For further information, write to the College of Arts and Sciences.

CAMPUS ACTIVITIES

Lecture-Concert Series

Each year the University presents more than fifty programs featuring concerts and special events of the School of Music, operas, lectures, and foreign films.

Recreational Facilities

The new Intramural Activities Building provides additional facilities for the expanding student recreation programs. It contains four full-size multipurpose gymnasiums, an indoor swimming pool, and other facilities designed primarily for student recreational use. In addition, the building has meeting rooms, a kitchen, and a student lounge with an adjoining sundeck. Fifteen

new tennis courts round out the improvements in the Intramural Activities complex.

The University provides the student with opportunities for a well-rounded college experience, which includes participation in social, recreational, and athletic activities. The Student Union Building (the HUB) is a cultural, social, recreational, and service center where all may hear fresh points of view and learn more about fellow students. Activities are planned and coordinated by student committees with the assistance of trained staff advisers. Regular dining facilities are provided by the Husky Den, the Cafeteria, the Husky Hollow, the Evergreen Room, and special rooms that are also available as private banquet rooms. Among the HUB's many facilities are the ticket office, auditorium, lost-and-found service, post office, lounges, bowling alley, billiard room, table tennis room, ballroom, bookstore, offices of student government, and meeting rooms.

Conibear Crew House, located on the shore of Lake Washington just north of Edmundson Pavilion, is one of the most modern college shellhouses in the country. It also provides living accommodations for 75 men. The Clarence S. "Hec" Edmundson Pavilion, seating 9,200 persons, is used for basketball, handball, wrestling, volleyball, gymnastics, other sports and student events. Adjacent is a large swimming pool for classes and events.

Hutchinson Hall, the center for women's physical education activities and instruction, is equipped for basketball, badminton, tennis, swimming, dancing, fencing, and has adjacent tennis courts and playing fields.

A golf driving range with twenty automatic tees is available for student, faculty, and staff use. Waterfront facilities support sailing and canoeing programs. A new marine recreational facility is planned for the future.

Since the University is located in a major recreational area, off-campus and public facilities for swimming, sailing, skiing, riding, camping, and fishing are plentiful. Mountain climbing also ranks high among Northwest sports.

Athletics

Intramural Activities

Intramural programs are open to the entire student body. The men's intramural program includes some thirty sports during the academic year. The women's recreational program offers approximately twelve sports. The Department of Intramural Activities supports 24 sports-related clubs in an extensive extramural program. Opportunities for coeducational recreation are available to students, faculty, and staff.

Intercollegiate Athletics

The Intercollegiate Athletics program offers a 14-sport program for male students, in which some six hundred men participate annually in baseball, basketball, crew, cross country, football, golf, gymnastics, skiing, soccer, swimming, tennis, track, water polo, and wrestling. Top-flight competition in the several sports is scheduled with conference schools in the Pacific-8 Conference, as well as with other schools in and outside the state. The well-rounded program emphasizes both scholarship and aggressive competition in sports.

Drama

The School of Drama schedules numerous productions during the year in its three theatres. These include productions directed by the faculty, master's degree candidates, and visiting directors. With the exception of the productions of the Professional Actors' Training Program, auditions for roles are open to the entire University community. In addition, the Readers Theatre of the Department of Speech sponsors a series of interpretative readings, both from ancient and contemporary sources in poetry, prose, and drama.

Music

In addition to the fine music available to students through the lecture-concert series, both undergraduates and graduates from all academic fields are invited to participate in a variety of musical groups.

Vocal and instrumental performing groups include: University Symphony Orchestra, University Sinfonietta, Concert Band, Wind Sinfonietta, Marching Band, University Singers, University Chorale, Madrigal Singers, Opera Workshop, Opera Theatre, Festival Opera, Contemporary Group, and Collegium Musicum.

Program of Forensic Studies

The University Program of Forensic Studies, open to all undergraduates, provides qualified students an opportunity for concentrated study and practical experience in the processes of forensic deliberation, including debate, discussion, oratory, extemporaneous speaking, and oral interpretation of literature. Freshmen are especially urged to participate. Each year's schedule includes numerous opportunities for beginners in college forensics.

Religious Activities

There are various religious groups within the University community. These groups offer educational, community action, counseling, worship, and social opportunities to persons in the University community.

Student Government

The Associated Students of the University of Washington (ASUW) is a corporation representing student governmental and service interests on campus. All full-time students are automatically members. Of each full-time student's quarterly fees, \$2.50 is allocated to the ASUW for support of its programs and services. The ASUW is headed by a president and three officers elected by the student body during Winter Quarter each year. The Board of Control (BOC) is the legislative body governing the ASUW, and consists of the four ASUW officers, five students elected at large, and three appointed representatives. The ASUW provides a broad range of services to students, particularly through its commission structure. The commissions are briefly outlined below. For more detailed information on student services and activities, a *University of Washington Student Handbook* has been prepared by the ASUW and is available in the HUB at the following offices: Room 109, the Information Booth; Room 204L, the Information Commission Office; and Room 207, the Student Activities Office.

ASUW Commissions

Community Services: Stay Tutoring, Project Accomplish, and Social Tutoring place volunteers and tutors in community service agencies and Seattle Public Schools. There are programs for volunteer community action and credit under the auspices of the commission.

Political Education Commission: PEC serves as an information center regarding state and local politics, particularly through its liaison, IPAC (the Intercollegiate Political Affairs Commission) established to represent state college and university student bodies in the Washington State Legislature.

Women's Commission: All areas of women's rights, particularly within the University community, are the focus of the Women's Commission. In the past their activities have focused on all aspects of discrimination against students, faculty, and staff women. A primary thrust of the commission is educational activity involving lectures, symposia, publications, and consultative services for women students.

Commuter Union: The unique needs of commuting students are represented by this commission. Studies have been done regarding transportation, lounge space, and parking for commuter students out of the commission's offices.

Program Panel: All major concerts and cultural events are sponsored under the auspices of the Program Panel. A fine arts festival is a yearly event sponsored by the commission, as is Homecoming.



Environmental Works: The primary focus of the commission is on the University as an effective ecological community. The commission also serves as a clearing house on environmental issues, both within the campus community and in the broader Seattle community.

Information Commission: This commission serves as a liaison and informational link between the ASUW, its agencies, and the student body at large. The Information Commission operates the CAGE, an art center for student organizations, and also coordinates an information booth in the Student Union Building. Under its auspices, the informational "Student Handbook" is published each year.

Minorities Commission: This commission is made up of representatives of the American ethnic and cultural minority groups on campus. Under its auspices, Ethnic Awareness Week was sponsored, as well as other cultural events and speakers.

International Commission: The International Commission of the ASUW is a liaison to our foreign students on campus. Speakers and cultural events are sponsored under its auspices.

Other ASUW Activities

Regular services of the ASUW include Lecture Notes, the CAGE Poster Printing Service, and funding for student legal aid service. Board of Control meetings are held weekly and are open to the campus community. Students interested in becoming involved in governmental areas of the ASUW, including seats on University faculty-student-staff committees, or in any programming area, are urged to talk with a representative of the Information Commission, an ASUW officer, or a staff adviser in 207 HUB.

Graduate and Professional Student Senate

The GPSS consists of one elected senator from every academic unit granting a graduate and/or professional degree. The senate elects its own officers, and has a system of standing committees and problem-centered subgroups to focus the interests and concerns of graduate students at the departmental level and within the University administration, particularly in standing committee appointments. The GPSS Office is located in Room 304G of the HUB, telephone (206) 543-8576.

Student Activities Office

A staff of advisers and office personnel are available in 207 HUB to facilitate student programs and services. In conjunction with the Adviser to Student Organizations, the Activities staff can serve as resource people on University policy and procedures, as well as in areas of program content.

Student Organizations

Students are encouraged to become active in at least one of the approximately three hundred and fifty voluntary student organizations on campus, which include honoraries, professional and social organizations, co-operative houses and residence clubs, service and coordinating clubs, activity groups, church and fraternal organizations, and geographical groups.

Student Publications

Student publications at the University of Washington include the *Daily*, the *Tyee* yearbook, and the *Student Directory*. The *Daily* is published Tuesday through Friday mornings throughout the academic year, and is distributed on campus without charge. During Summer Quarter the *Daily* is published once a week. Any student with an interest in journalism is eligible to serve on the *Daily* staff. The *Tyee* yearbook is prepared by students who have volunteered their services. Top editorial and managerial positions on student publications carry nominal salary allowances.

A number of other publications, such as *Assay*, a journal of creative writing, are prepared by various student groups.

Foreign Students

Over eighteen hundred foreign students from more than ninety countries now attend the University of Washington. Day to day contact with these students provides American students with the opportunity to learn ways in which other people live. Such contacts are valuable and take place in classes in all subjects, even though they are obviously especially valuable in fields of study such as political science, languages and literature, and geography. The free exchange of ideas and opinions, both in class and elsewhere when students meet informally, is an important benefit of attending a large university with a sizeable foreign student population. Foreign students also significantly enrich the cultural environment at the University through their contributions in the fields of art, music, and drama.

The fifteen foreign student organizations recognized by the University provide a variety of programs designed to acquaint American students with the practices, customs, and traditions of other countries. The Foundation for International Understanding Through Students, a private community organization, has offices on campus and, in addition to providing host families for foreign students, sponsors numerous activities for the mutual benefit of both foreign and American students.

STUDENT SERVICES

Academic Advising

Faculty members are available for personal discussions with students outside the classroom. However, since most professors at the University are engaged in a variety of teaching, research, and public service activities that occupy much of their time, students must take the initiative in establishing advisory relationships.

Academic advisers are available to consult with students on registration, curriculum development, academic standards, degree requirements, and, more generally, about all educational concerns. Advisers are usually located in a central advisory office within each college; however, the larger colleges often delegate certain advisory responsibilities to the individual departments.

The extent to which students should use advisory services becomes a matter of individual need. Many departments require students to have periodic reviews of their academic programs with advisers, but beyond this the use of such services depends upon individual interest and concern about one's educational development. Students will find that advisory services, both formal and informal, are available once sought.

Office of Student Affairs

The Office of Student Affairs is concerned with the general welfare of students in their extracurricular life and activities and provides various nonacademic services to assist them. It welcomes correspondence and conferences with both parents and students. This office works closely with the advisers of the colleges and schools, the Counseling Center, and other agencies to provide assistance with personal, social, and adjustment problems that may influence a student's academic performance.

Students are invited to contact the Office of Student Affairs for information about fraternities, sororities, special programs of living groups, student organizations, and special services for physically handicapped students.

International Services Office

Students from other countries may contact the Office of International Services for information or counsel about immigration regulations, housing, social relationships, personal problems, minimum course requirements, employment opportunities, finances, and applications for scholarship aid (no scholarships are available for Summer Quarter). The Office also provides assistance in immigration matters to noncitizen faculty and staff.

Foreign Study

As a member of the Northwest Interinstitutional Study Abroad Council, the University of Washington cooperates with other Northwest institutions in offering programs of liberal arts study in Europe and Mexico for the undergraduate. Students enroll in an interdisciplinary program of study and may pursue a specialized area on an intensive basis. The School of Art offers special courses in studio art and art history during the spring session in Avignon. Excursions complement the formal course work and "home stays" are arranged at each study locale. Students may also pursue language and area studies through the Cooperative International Program for Teacher Education (CIPTE) in Nice, Rennes, and Seville. Although enrolled for direct credit at the University of Washington, students are in attendance at a European university.

The University of Washington Department of Germanic Languages and Literature offers a program of summer language study in Berlin and Marburg, Germany. Excursions and attendance at musical and theatrical performances supplement the academic program, and home stays are provided.

Once every two years the Center for Asian Arts offers the Kansai program in Kyoto for two quarters of intensive study of Japanese theater, art, and language. Each year the English Summer Theatre School offers several weeks of practical training in the dramatic arts at a site near London.

The Department of Slavic Languages and Literature joins with other institutions in offering summer semester Russian language programs in Leningrad. These are coordinated by the Council on International Educational Exchange in New York.

Many University departments have specialized programs for their advanced students. The Classics and Asian Languages and Literature departments recommend students who have passed competitive examinations for an academic year in Rome, Taipei, and Tokyo through interinstitutional programs administered by Stanford University. Selected art history students study in London during Spring Quarter with a School of Art faculty member. A small number of students from the Graduate School of Business Administration may undertake special research projects in Japan and Western Europe. The Department of Architecture selects students to carry out special projects in various overseas locations.

Information on the University's Foreign Study Programs is available through the Foreign Study Office.



University of Washington programs in other academic fields and in other locations are announced as they develop.

Academic credit may also be awarded for satisfactory participation in many overseas study programs not directly sponsored by the University of Washington. Since study experience in another country can make a valuable contribution to the education of the serious student, the University maintains a counselor in the Foreign Study Office to assist students interested in these programs or in study at a foreign university.

Counseling Center

The services of the Counseling Center are directed toward assisting the typical student to resolve the inevitable problems he encounters at the University in his effort to actualize his potential for intellectual, social, and emotional growth. A staff of psychologists and vocational counselors offer vocational, educational, and personal counseling to students without fee. The student is assisted to see himself and his situation more fully so that he better knows and accepts the resources he has available for resolving his indecisions or concerns. His attempts at self-appraisal may be facilitated by specially selected psychological tests which can help clarify the issues that have become identified as important to him. A library of occupational information is also provided for students' use.

The Counseling Center offers an eight-week Effective Study Program designed to assist students in improving their patterns of study and to equip them with effective study techniques: reading for answers, note taking in class and from textbooks, listening, and learning how to study for exams, among other matters.

Bureau of Testing

In addition to providing a variety of educational and psychological testing services for departments, the Bureau of Testing, with offices in Schmitz Hall, sponsors a number of testing programs of interest to prospective University entrants and to University students approaching graduation.

The Bureau provides for University participation in the Washington Pre-College Testing Program, administering and processing the battery of grade-prediction tests. Entrance placement testing in English, mathematics, and the foreign languages is also arranged by the Bureau staff. For the graduating University student, the Bureau offers a number of tests required either for admission to graduate, law, medical, and other professional schools or, if he should request it, for the infor-

mation of governmental and private prospective employers.

Health Services

The University operates the Hall Health Center as a medical care facility for students but not for their dependents.

Clinics, open from 8 a.m. to 5 p.m. Monday through Friday throughout the calendar year, offer general medical care and specialist consultation of several types.

A 35-bed hospital unit operates from about September 15 through June 15; night emergency service is also available during the regular school year.

There is no charge for professional services obtained through the Student Health Service. However, there are certain fees that students must pay: \$2.00 per day for hospital confinement, \$1.00 per injection for allergy shots, and \$2.00 per immunization for personal travel shots. Students must also pay for outpatient prescriptions. Major surgery and the occasional illness of exceptional severity will require treatment elsewhere, and the student should protect himself against the expenses of these by supplementary medical insurance. A low-cost group medical-surgical-hospital policy designed to meet these specific needs may be purchased at time of registration.

Placement Center

The University provides an extensive career planning and placement program to assist graduating students and alumni in finding suitable career opportunities, and to be of help to them in obtaining career oriented part-time and summer work while attending the University. Students and alumni wishing assistance or seeking information on vocations or employment should come to the Placement Center, 301 Loew Hall, where the Career Information Center is located. Students are encouraged to use the career planning and counseling service during their junior year, so that they can most effectively participate in the placement program services no later than the beginning of their last year in residence.

The career planning program centers about a Career Information Center which houses information relating the variety of occupations available to students in specific academic areas, providing insight into specific businesses, industries, and governmental work, and providing descriptions of specific employer organizations and employment opportunities. In addition, placement counselors are available to assist the student in exploring the world of work and to provide infor-

mation concerning employment opportunities with specific employer organizations. Information on what happens to graduating students—the kinds of employment they accept, the locations and compensations—is available to students and members of the University staff.

The placement program serves primarily those students who are within a year of graduation and those alumni who are seeking new employment. Job-seeking assistance is provided throughout the year and specific job opportunities listed with the Placement Center are always available. Campus interviewing also provides the student with the opportunity to contact many potential employers easily and conveniently. However, since interviews do not take place throughout the school year, it is important that the student contact the Placement Center early in his last year in order that interviews can be arranged with employers in the fields in which he is interested.

Students and alumni interested in obtaining employment in educational fields should contact the office at the beginning of their last year at the University and establish a permanent file of teaching credentials which will be made available to the *bona fide* employer upon request.

Financial Aid

University students who are faced with serious financial problems should inquire about assistance at the University of Washington Office of Student Financial Aid, Schmitz Hall, Seattle, Washington 98195. The primary purpose of the Financial Aid Program is to provide financial assistance to students who, without such assistance, would find it impossible or difficult to enter or remain in college. Another important purpose is to provide financial assistance to students experiencing acute, temporary financial emergencies.

Students should apply at the Office of Student Financial Aid for Educational Opportunity Grants, undergraduate scholarships, federal and University long-term low-interest loans, University short-term emergency loans, and employment under the College Work-Study Program.

Graduate students may obtain loan and employment information through the Office of Student Financial Aid. Information on graduate fellowships, scholarships, and teaching and research assistantships may be obtained from the Graduate Program Adviser in the department, the Graduate School and the *Graduate Study* section of this catalog.

The Office of Student Employment, Schmitz Hall, lists many part-time, temporary, and summer jobs available both on and off campus to University students and their spouses. A student may make application *only in person* after he is enrolled, or in the process of enrolling, with matriculated standing at the University.

Social Security and Railroad Retirement Benefits

Students who receive benefit payments from the Social Security Administration or Railroad Retirement Board should inquire at the Registrar's Office, Schmitz Hall, regarding full-time eligibility requirements. In general, a student must carry 12 credits each quarter to be considered a full-time student.

University Book Store

The University Book Store, in operation since 1900, is located at 4326 University Way NE. The Textbook Department stocks required and recommended texts for all University courses plus technical and reference books and study aids. The Book Shop offers a wide selection in fiction, nonfiction, poetry, and 20,000 titles in paperback books for inexpensive supplementary reading. The Student Supplies Department carries art, science, engineering, and architecture materials as well as general supplies. There are also camera, typewriter, pen, sports, gift, and music shops.

An administrative-faculty-student board of trustees determines policies of the Book Store. Savings in operations are returned to students and staff through a variety of methods. For the convenience of students and staff a parking lot is available at the rear of the store.

Students will find a convenient supply of miscellaneous items and paperback books at the branch stores in the Student Union Building (HUB) and the Health Sciences Building.

Selective Service

The Registrar of the University is responsible for maintaining liaison with the Selective Service System. General information regarding Selective Service and student deferments may be obtained at the Registrar's Office. The Office of Student Affairs provides counseling and advice in regard to the different classifications under the Selective Service Act.

Parking

Self-operating parking areas on the periphery of the campus are available to students at a nominal cost. Physically handicapped students may apply to the Safety Division for assignment to available parking spaces in the central campus area.



FEES AND EXPENSES

See *Rules and Regulations* section for specific information regarding payment of fees, other fees charged by the University, and refund policies.

Resident Students

A resident is one who has been domiciled in Washington for at least a year immediately prior to registration. Examples of Autumn, Winter, or Spring Quarter fees for undergraduates and graduates, including law, dental, and medical students, are listed below.

Quarterly Tuition and Fee Rates Effective Autumn Quarter 1971

<i>Undergraduate</i>	<i>Resident</i>
Full fee (more than 6 credits)	\$165.00
Six (6) credits or less:	
Minimum (first two (2) credits)	\$ 50.00
Each additional credit	\$ 23.00

Graduate and Law

Full fee (more than 6 credits)	\$185.00
Six (6) credits or less:	
Minimum (first two (2) credits)	\$ 70.00
Each additional credit	\$ 23.00

Medical and Dental

Full fee (more than 12 credits)	\$275.00
Twelve (12) credits or less:	
Minimum (first two (2) credits)	\$147.00
Each additional credit	\$ 10.00

Nonresident Students

Prospective students are classified as nonresidents when their credentials come from schools outside the state of Washington. If they believe they are residents, they may petition the Residence Classification Office, Schmitz Hall, for a change of classification. Examples of Autumn, Winter, or Spring Quarter fees for undergraduates and graduates are listed below. (There is no nonresident fee for Summer Quarter.)

Quarterly Tuition and Fee Rates Effective Autumn Quarter 1971

<i>Undergraduate</i>	<i>Nonresident</i>
Full fee (more than 6 credits)	\$527.00
Six (6) credits or less:	
Minimum (first two (2) credits)	\$147.00
Each additional credit	\$ 76.00

Graduate and Law

Full fee (more than 6 credits)	\$547.00
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Six (6) credits or less:

Minimum (first two (2) credits)	\$167.00
Each additional credit	\$ 76.00

Medical and Dental

Full fee (more than 12 credits)	\$613.00
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Twelve (12) credits or less:

Minimum (first two (2) credits)	\$250.00
Each additional credit	\$ 33.00

Resident Status for Tuition Purposes

A *resident student* is one who has been domiciled in the state for a period of one year prior to the beginning of the quarter for which he registers. If the student is a minor, his domicile is normally determined by that of his parents. For factors important in determining the legal domicile of the student see *Rules and Regulations* section.

A prospective student is *tentatively* classified as a *non-resident* when credentials are presented from an institution of learning not located in the state of Washington. A student is likewise *tentatively* classified as a *non-resident* if he has attended a school located in Washington but has subsequently resided in another state. If the student believes himself eligible for resident status, he should file an application for resident classification with the University of Washington Residence Classification Office, Schmitz Hall, Seattle, Washington 98195. Residential status may be cleared by mail and should be done at least thirty days prior to the quarter he is applying for in order to allow sufficient time for the determination of proper residential status. Application forms are available in the Residence Classification Office or will be mailed upon request.

The foregoing are the general rules followed in determining residential status for tuition purposes in accordance with the laws of the state of Washington. The facts and circumstances involved in each case must be set forth in full on the application for resident classification.

For further information, see *Rules and Regulations* section.

Estimated Expenses

Special fees and deposits are not included in these estimates. The actual costs of books and materials are dependent on the student's major, and it should be understood that actual personal expenses will vary according to individual needs and tastes. It is recommended that each student make careful estimates of his additional expenses, such as transportation, clothing, etc.

Estimate of Living Expenses for Academic Year

FULL-TIME STUDENT

Tuition and Fees

Resident	\$ 495.00
Nonresident	\$1,581.00

Optional Fees

Medical Insurance Rates vary

Medical insurance may be purchased on a quarterly basis; coverage for dependents is available.

Army, Air Force ROTC Uniform Deposit ..\$ 25.00

Athletic Admission Ticket\$ 10.00

Other Expenses

Residence Hall (room and meals) \$1,005.00 (average)

Fraternity or Sorority' (room and meals)

Living at home\$ 400.00 (average)

Living in house	\$1,000.00 (average)
Books and Supplies	\$ 300.00
Personal Expenses	\$ 500.00

Tuition and fees are subject to yearly change. It should be recognized that personal expenses for such items as clothing, laundry, recreation, and transportation may vary as widely as do the interests and needs of individual students. Parents of students living at home sometimes assume responsibility for many of these expenses, in addition to room and board.

Note: All fees, extra service charges, and rentals are payable in United States dollars. The University reserves the right to change any of its fees and charges without notice. There is no reduction of fees for auditors or nonmatriculated students.

Fee schedules for resident and nonresident students apply to the academic year (Autumn, Winter, and Spring Quarters). Summer fees are listed in the *Summer Quarter Bulletin*.



UNDERGRADUATE EDUCATION

Eligibility for admission is determined by the Board of Admissions, Scholastic Standards, and Graduation, according to criteria established by the University faculties. An admitted student is required to enter one of the University's colleges or schools whether or not he is prepared to choose an academic major. If he elects to choose a major from among the more than one hundred courses of study available, he is enrolled in the school or college offering the program and, if space is available, in the major department of his choice. In the event that limited faculty and facilities make it impossible to accept a new student into a particular program, he may be accommodated as a premajor in the College of Arts and Sciences. If, on the other hand, a student prefers to sample the rich variety of courses offered before he commits himself to a major, or if he wishes to undertake a preprofessional curriculum, e.g., prelaw, premedicine, predentistry, he will also be enrolled as a premajor in the College of Arts and Sciences.

Premajor students have great freedom in the selection of courses that may enable them to explore new areas of interest or to complete prerequisite courses necessary for admission to a professional or other particular degree program. Transferring from a premajor to a degree program is often competitive. Acceptance will depend on the standards of selection established by the department offering the program and whether or not the demand exceeds available faculty and facilities. Because of this situation, students entering as premajors are urged to contact the college and/or major department for information on transfer as soon as their choice is firm.

Honors programs in the colleges of Arts and Sciences and Forest Resources, that allow for opportunities for study in greater depth, are available to qualified students through special tests. Other tests are used for determining proficiency in language, mathematics, and other areas; the allowance of advanced credit; and assignment to the appropriate class level. For a complete list of programs of study, degrees offered, and the organization of the instructional departments within schools and colleges, see the *General Information* section of this catalog.

ADMISSION POLICY

To be considered for admission to the University's undergraduate colleges, a student must satisfy the minimum criteria described below. However, because there are more applicants than can be accommodated, satisfaction of these minimum admission standards does not guarantee acceptance. Special consideration is given, as necessary, to the academic qualifications, the date of application, to the applicant's choice of curriculum, and the availability of space at the proposed level of entrance.

Applicants presenting transcripts from schools using nonpunitive grading systems may be required to take tests or to provide other supplementary information for determining their admissibility if their records do not give sufficient evidence of their probable success.

Educational Opportunity Program

Minority students and others who have not received the usual educational advantages are urged, regardless of

their previous academic records, to apply for admission to the University through its Educational Opportunity Program. Applicants are selected to the extent that funds and facilities permit and are given special help so that they may achieve their potential at the University.

Nonresident Students

In recognizing the educational benefits of a cosmopolitan student body, the University has traditionally welcomed out-of-state and foreign students. With increasing numbers of applicants and a shortage of resources, the University has had to limit its enrollment to some extent.

Nonresident sons and daughters of University of Washington alumni are considered according to resident admission criteria, but are required to pay the regular nonresident tuition and fees.

Foreign Students

The University of Washington believes that its greatest contribution to international education can be made in fields of advanced study. Since its facilities are limited, virtually no unsponsored undergraduates are accepted directly from abroad.

The academic qualifications of students attending high schools or colleges in the U.S.A. on student or immigrant visas are determined according to resident standards if the school is in the state of Washington, and according to nonresident standards if located elsewhere. (See also "Admission Criteria for Transfer Applicants.")

Board of Admissions

Because university work is demanding, the University's Board of Admissions endeavors to give the best possible counseling to students through its admission decisions. Applicants who are dissatisfied with the original decision may appeal to the Board of Admissions with the assurance that any additional evidence in support of their application will be carefully reviewed.

Application Deadlines

Application deadlines* are as follows:

Autumn Quarter	
Freshmen (from high school)	May 1
Transfers and fifth-year students	July 1
Winter Quarter	November 1
Spring Quarter	February 1
Summer Quarter (to assure consideration)	May 15

Application forms, obtained from the Office of Admissions, should be returned as soon as possible because quarterly quotas may be filled before the deadlines.

Transcripts should be sent according to instructions on the back of the form. Credentials will be reviewed soon after they are received and applicants will be notified of their admission status as soon as possible.

Admission Criteria for Freshman Applicants

Minimum preparation for freshman standing includes graduation from an accredited high school with an overall grade-point average of at least 2.50 (3.20 for nonresidents of Washington) and completion of three years of English, two years of one foreign language, two years of college preparatory mathematics (usually algebra and geometry), one year of a laboratory science (preferably biology, chemistry, or physics), two years of a social science, and two years of electives chosen from the above areas. Nonresidents must also present satisfactory scores on the American College Test or the Scholastic Aptitude Test. (See "Examinations and Tests.")

Freshman students planning to enter the College of Arts and Sciences are urged to complete four years of English, three years of a foreign language, and three years of mathematics. With this background, a student will have fulfilled the proficiency requirements for graduation from the College of Arts and Sciences.

Admission Criteria for Transfer Applicants

Minimum qualifications for admission with advanced standing include completion of the specified high school units or equivalent introductory college courses with 5 credits treated as the equivalent of one high school unit. A deficiency in mathematics may be removed by completion of elementary algebra and plane geometry or a college course in intermediate algebra with no credit. Deficiencies in foreign language and laboratory science may be removed by completion of 10 credits in foreign language and 5 college credits in a laboratory science with credit. Moreover, the academic record must show an overall college grade-point average of at least 2.00 for residents and 3.00 for out-of-state students.

Because the University's facilities are limited, preference is given to academically qualified transfer applicants who have completed all or most of their lower-division courses. Highest priority will be given to those who have achieved the credit levels indicated below. Applicants who have not reached the credit levels indicated will be considered for admission as space permits.

Assuming that the transfer applicant has three units in high school English or the college equivalent and no deficiencies in other areas of high school preparation,

* These dates are subject to change by the University.



he is advised to consult the appropriate section of this catalog for information on the most desirable courses to take so that he may achieve the following credit levels:

COLLEGE OF ARCHITECTURE AND URBAN PLANNING	
Architecture (Environmental Design), Landscape Architecture, Urban Planning (Environmental Design)	90
Building Construction	45
COLLEGE OF ARTS AND SCIENCES	75
SCHOOL OF BUSINESS ADMINISTRATION	90*
SCHOOL OF DENTISTRY	
Dental Hygiene	90*
COLLEGE OF EDUCATION	90*
COLLEGE OF ENGINEERING	45
COLLEGE OF FISHERIES	
Fisheries Food Science	75
COLLEGE OF FOREST RESOURCES	75
SCHOOL OF MEDICINE	
Physical Therapy, Occupational Therapy, Medical Technology, Prosthetics and Orthotics	90*
SCHOOL OF NURSING	
Basic Program	45
COLLEGE OF PHARMACY	45

*Students applying to this college or school with 75 but fewer than 90 credits will be enrolled initially in the College of Arts and Sciences, if space permits. Such students will be classified as pre-majors and, like all premajor students, will be eligible to be considered for transfer from premajor according to their qualifications and the availability of space in the program of their choice.

Admission of Fifth-Year Students

Students holding baccalaureate degrees may be considered for admission to one of the undergraduate colleges to pursue programs leading to: (1) a second bachelor's degree, (2) a teaching credential.

New students and former students who have not attended the University since they received their baccalaureate degrees must make application through the Office of Undergraduate Admissions and must be accepted by one of the undergraduate colleges. In selecting students for this classification, careful consideration is given to their scholastic record during the junior and senior years of undergraduate study as an indication of probable success in achieving their educational objectives. Ordinarily, a resident of Washington is expected to present a grade-point average of at least 2.50. An out-of-state applicant must have a grade-point average of at least 3.00 in the junior and senior years of his baccalaureate degree program. Final acceptance is contingent on the availability of space, and acceptance by the University division concerned.

Fifth-year students are not in the Graduate School nor are they permitted to register for courses numbered 500 and above without special permission. Courses completed while in the fifth-year status may not ordinarily be applied later on to an advanced degree in the Graduate School.

Nonmatriculated Standing

A nonmatriculated student is one whose educational goals are limited and who has been permitted by the

Board of Admissions to enroll for credit in day or evening classes to the extent facilities are available. Applications for nonmatriculated standing are made through the Office of Undergraduate Admissions.

Students with nonmatriculated standing are not enrolled in a program of studies leading to a University of Washington degree or teaching credential. Permission to enroll under this status does not imply a commitment on the part of the University to extend admission beyond one calendar year or to allow transfer to a degree program. If a student is later admitted as a matriculated undergraduate, the scholastic standing achieved and appropriate credits earned in the nonmatriculated status may apply toward the requirement for the baccalaureate degree. However, the final 45 credits must be earned in a matriculated status in order to meet the graduation requirements.

Admission of Auditors

Individuals who wish only to audit courses should apply through the Office of Undergraduate Admissions for nonmatriculated standing. Attendance in courses as an auditor is by consent of the instructor involved and is conditioned by the extent to which space is available. Permission to audit is ordinarily granted for lecture classes only. Auditors may not participate in class discussion or laboratory work, and their registration may be cancelled at the discretion of the instructor.

To receive credit for an audited course, the student must register for the class for credit in a subsequent quarter.

Admission of Veterans and Children of Totally Disabled Veterans and Personnel in the Armed Forces

All applicants must fulfill admission criteria described elsewhere in this catalog.

Personnel in the Armed Forces should consult their education officers. Veterans and children of deceased or totally disabled veterans should contact the nearest office of the Veterans Administration—in Seattle, the Sixth and Lenora Building, Seattle, Washington 98121, or the University of Washington's Office of Veteran Affairs.

ADMISSION PROCEDURE

Application

A request for an Application for Admission form and all correspondence regarding admission with undergraduate standing in any college or school at the University should be addressed to the University of Washington Office of Undergraduate Admissions,

Schmitz Hall, 1400 N.E. Campus Parkway, Seattle, Washington 98195. The application form should be completed and the high school and/or college transcripts furnished according to instructions on the form.

Tentative admission decisions can be made frequently on preliminary records with final acceptance contingent on satisfactory completion of work in progress. For this reason, the applicant for admission with freshman standing is advised to file an application form and a preliminary transcript showing his record through the junior year of high school. Washington students may substitute their Washington Pre-College Testing Program data report. Applicants for transfer from other colleges should file an application and preliminary transcripts no later than the beginning of their final term in the school where they are currently enrolled. In any case, complete credentials must be filed prior to the dates indicated earlier in this section. Students from foreign countries are admitted for the school year beginning in mid-September.

Notification of Admission Status

Applicants are notified officially of their admission status after complete credentials have been reviewed. Students who accept the offer of admission, through payment of a deposit on tuition, will receive instructions regarding registration and the payment of fees. The University assumes no responsibility for students who do not comply with the procedures or observe the instructions in the registration leaflet, or for applicants who come to the campus before they have received an official appointment for registration.

The Offer of Admission is valid only for the quarter indicated and the qualifications of students whose enrollment is delayed are subject to re-evaluation. Applicants who wish to be considered for a subsequent quarter should request a renewal application form.

Retention of Records

The credentials of applicants who do not register for the quarter to which they have been admitted are normally discarded unless the applicant has notified the Office of Undergraduate Admissions of his continued interest in attending the University or of his enrollment in Independent Studies programs.

Credentials submitted to the Office of Undergraduate Admissions become the property of the University and may not be returned to the student or duplicated for any purpose.

Campus Visitation

The University welcomes campus visitors whether singly or in groups. However, resources are limited and

visitors are asked to make arrangements in advance by writing or phoning the offices of High School Relations.

Requests should be addressed to: University of Washington, Office of High School Relations, Schmitz Hall, Seattle 98195. Telephone (206) 543-4873.

Housing Reservations

Admission to the University does not assure assignment to living quarters and, therefore, housing arrangements must be made separately. Application for University residence halls may be made prior to acceptance for admission but not before February 15 for Autumn Quarter. Early application is encouraged. Application for housing for married students may also be submitted prior to admission but no earlier than nine months prior to actual enrollment.

Health History Form

All new students, and former students who return following an absence of one calendar year, are required to submit a medical history and medical examination report, according to instructions appearing on the form, prior to registration. Forms for submitting the report are mailed to the applicant.

EXAMINATIONS AND TESTS

Most entering undergraduates will be required to take examinations for counseling and placement purposes at some time prior to their first registration. These examinations should be completed before the student meets with an adviser. Only out-of-state freshmen are required to submit the results of either the Scholastic Aptitude Test of the College Entrance Examination Board or the aptitude tests of the American College Testing Program.

Washington Pre-College Testing Program

The Washington Pre-College Test (WPCT) is required, prior to registration, of all freshmen entering directly from Washington State high schools. Out-of-state students may take the test, if they wish, during the registration process. Students attending high schools in the state of Washington are urged to take the examination during the spring of their junior year. A copy of the WPCT data report should be sent with the application form to the University of Washington Office of Admissions. Foreign and blind students are exempted from taking the WPCT.

Mathematics Placement Tests

Entering freshmen who plan to take mathematics courses at the University will be assigned to the



appropriate course on the basis of placement tests as well as their high school mathematics backgrounds. Those who have taken the Washington Pre-College Test may be placed on the basis of their score on the Mathematics Achievement section of that test, unless they have had additional mathematics since taking the WPCT, in which case they should take a retest in the Bureau of Testing. Those who have not taken the Washington Pre-College Test should take a mathematics test in the Bureau of Testing for proper placement before seeing an adviser. Placement tests available include one in trigonometry, one in elementary functions, and two in calculus.

Transfer students who wish to take mathematics courses at the University but who have not yet taken any mathematics courses in college will be assigned the appropriate course on the basis of placement tests. Those who have already completed a college mathematics course, however, will continue on to the next higher course without taking a placement test.

Freshmen English Placement Test

The Washington Pre-College Test also evaluates the student's preparation in English. A student's English Composite score is used as a guide for his placement in various writing courses available at the freshman level.

Foreign Language Placement Examination

Freshmen who plan at any time during their first several quarters at the University to continue a foreign language they studied in high school should take a language placement examination. No examination is required if a student wishes to begin study of a new language.

Transfer students who have not taken college-level language courses but who now plan to continue a language they studied in high school should also take a language placement examination. A transfer student who has already taken college-level language courses, however, should consult his adviser about appropriate courses if he wishes to continue language study. He need not take a placement test, since he is placed on the basis of his previous college study.

A student who scores high enough on the test to place in the sixth quarter or beyond of a language may be awarded advanced placement credit when he completes the course into which he has been placed.

Credit Examinations

For details about different programs offering advanced credit and/or placement, consult the *Rules and Regulations* section of this catalog.

HONORS

High scholastic achievement is encouraged and recognized in many ways at the University of Washington. A major effort is made to place the student at an academic level in keeping with his ability and preparation.

Honors programs are available to academically talented students in the College of Arts and Sciences and the College of Forest Resources. (See appropriate sections for details.)

Special Honors Sections

Some colleges provide special courses and special sections of other courses for the unusually talented. Though primarily intended for those enrolled in formal honors programs, some sections are open to other qualified students.

Quarterly Scholarship Lists

These lists include the names of regular undergraduate students who have attained a grade-point average, non-cumulative, of 3.50 in the final grades for at least 12 graded hours exclusive of pass/fail courses and lower-division ROTC courses.

Yearly Undergraduate Honors List

Names of all undergraduates who have achieved a cumulative grade-point average of 3.50 or better for at least 36 graded hours of resident instruction in three quarters or 46 graded hours of resident instruction in four quarters at the University of Washington during the preceding academic year, exclusive of pass/fail courses and lower-division ROTC courses, are included on this list.

Certificates of High Scholarship

The University of Washington awards certificates of high scholarship to sophomores, juniors, and seniors who show excellence in scholarship during their freshman, sophomore, and junior years, respectively.

Sophomore Medal

Annually, the junior having the highest scholastic standing for the first two years of his program receives this medal from the President at the Scholarship Banquet.

Junior Medal

Annually, the senior having the highest scholastic standing for the first three years of his program receives this medal from the President.

Baccalaureate and College Honors

Baccalaureate honors (*summa cum laude*, *magna cum laude*, *cum laude*) are awarded to recipients of a first

bachelor's degree. These honors are based on the student's entire scholastic record. Transfer students must have completed at least 90 credits at the University of Washington.

Students successfully completing the College of Arts and Sciences Honors Program are awarded a bachelor's degree "With College Honors" in the major field. Arts and Sciences students completing the honors curriculum in a single department are graduated "With Distinction" in the major field.

Graduation honors, which are awarded once a year, appear in the *Commencement Program*, are inscribed on the student's diploma, and are recorded on his record.

President's Medal

Conferred at Commencement, the President's Medal recognizes the graduating senior who has the most distinguished academic record. A transfer student who has earned at least 90 credits at the University of Washington may be considered.

ENROLLMENT

If the entering student is relatively sure of his objectives, and has perhaps taken advantage of high school career days or received specialized vocational counseling, he enrolls in the college which offers the curriculum in which he intends to major.

If he wishes to pursue a preprofessional program (dental hygiene, dentistry, law, medical technology, medicine, occupational therapy, physical therapy, or prosthetics and orthotics), he enrolls in the College of Arts and Sciences. Here the premajor program is designed to provide a coherent, broad, academic program. The student in this status can satisfy certain graduation requirements and, through the judicious choice of electives, explore possible majors.

The student who is undecided about his career and has not chosen a major will find special facilities available for his use.

He can make use of the Counseling Center, which provides career counseling in the areas of vocational and educational choice. This service is free of charge to any registered University of Washington student. In addition, the University Placement Office maintains a library of career information, and staff counselors are available to provide first-hand information concerning hiring trends in business and industry.

Survey courses, for both majors and nonmajors in various academic departments, can acquaint the student with a particular subject or area.

University of Washington seniors who are within 6 credits of completing their undergraduate work and who otherwise meet the requirements for admission to the Graduate School may register the quarter just prior to admission to the Graduate School for as many as 6 credits in graduate courses in addition to their 6 credits of undergraduate work. These arrangements must receive prior approval by the Graduate School.

Change of College or Major

As the student matures and gains experience, he may shift his goal accordingly. Recognizing this, the University imposes no conditions upon a student who wishes to transfer from one college or major to another, other than the availability of space, provided he meets the qualifications of the major or college he wishes to enter.

The student who wishes to transfer from one college to another must obtain approval from the deans of the two colleges concerned. Forms for change of college can be obtained at the advisory office of the college the student is leaving.

To change majors within a college, the student should consult his academic adviser or the central advising office of his college.

Anyone considering a change of major or college is urged to discuss the matter thoroughly with his academic adviser and other knowledgeable persons.

ACADEMIC REQUIREMENTS

Credit Load

A full-time undergraduate student is one who is carrying at least 12 academic credits. A graduate student must carry 9 credits to be considered a full-time student. If an undergraduate carries 15 academic credits for each of the twelve quarters and passes them, he will have the minimum 180 credits necessary for graduation. In practice, students carry more or less than the usual number of credits, depending on personal circumstances and chosen programs.

In order to be eligible for participation in intercollegiate athletics, freshmen must carry at least 12 academic credits (including Physical Education Activity), and sophomores, juniors, and seniors must carry at least 12 academic credits (excluding Physical Educa-



tion Activity). In order to hold office in student governmental bodies, the student must carry a minimum of 10 credits each quarter.

Minimum Grade Points

The student is expected to maintain a reasonable level of academic performance consistent with University standards.

RESERVE OFFICERS TRAINING PROGRAMS

The Departments of Military Science, Naval Science, and Aerospace Studies offer ROTC programs under agreements between the University and the United States Army, Navy, and Air Force. Eligible freshman students may enroll in any one of the ROTC programs. Transfer or currently enrolled students who plan to attend the University at least six more quarters (excluding summer sessions) may apply for enrollment in ROTC. Participation in ROTC is elective.

The Department of Military Science offers a traditional four-year, a modified three-year, and a special two-year program each of which leads to a commission as a Second Lieutenant in the U.S. Army.

The Department of Naval Science offers a four-year program that may lead to a commission in the Navy or Marine Corps.

The Air Force program consists of a two-year General Military Course and a two-year Professional Officer Course, which lead to a commission as a Second Lieutenant in the United States Air Force. Any qualified male or female student may enroll in the General Military Course. Each qualified entering freshman may register for Air Force ROTC and be enrolled in the four-year program. Students to be given financial assistance will be advised accordingly. Transfer students having eleven or more quarters remaining in school may also enroll in the four-year program. Students with at least two full years remaining in school may apply for the two-year program. AFROTC counselors are available at all times in the Aerospace Studies Department.

Students given financial assistance and entering the advanced or upper-division ROTC program must agree in writing to complete the program and accept a commission in the service for which they are educated.

The specific courses and requirements for each service are described in the following sections. The courses are taught by regular officers assigned to the University by the Army, Navy, and Air Force.

Air Force

Professor of Aerospace Studies

Col. Harvey W. Prosser, Jr., USAF
Clark Hall

Assistant Professors

Russell A. Ambroziak, Joseph D. Kormanik, Larry W. Slessler

The Air Force ROTC program is designed to provide for the development of skills and attitudes vital to the career professional Air Force officer. The graduate qualifies for a commission and enters upon active duty in the United States Air Force.

The four-year Air Force ROTC program consists of a two-year General Military Course, and a two-year Professional Officer Course. Any qualified male or female student may enroll in the General Military Course. This program consists of one classroom hour and one Corps Training hour per week during the freshman and sophomore years. Uniforms and textbooks are furnished.

After completing the General Military Course, cadets may apply for entrance to the Professional Officer Course. Entrance is competitive.

Cadets selected for enrollment in the Professional Officer Course are enlisted in the Air Force Reserve, receive subsistence pay of \$50.00 per month. They are furnished texts and uniforms, and are required to attend three class periods and one Corps Training hour each week. Between the sophomore and junior year, each cadet is required to attend a four-week Field Training Course at an Air Force base, for which he receives pay. Travel costs are paid by the Air Force.

Financial Assistance Grant Program

Each year a number of selected cadets in the four-year program are awarded AFROTC College Scholarships. These cadets are enlisted in the Air Force Reserve and receive tuition, fees, books, uniforms, and \$50.00 subsistence per month. Course requirements are as described above.

Two-Year Air Force ROTC Program

To provide for those students who are unable to participate in the four-year Air Force ROTC program, a two-year Professional Officer Course is available on a competitive basis. Students in this program are required to attend a six-week Field Training Course at an Air Force base during the summer preceding entry into this program. The student is paid during the six-week period. Course requirements, upon return to the campus,

are as listed for the Professional Officer Course. Uniform, texts, and \$50.00 subsistence per month are provided.

Flight Training

Flight training is available to physically qualified cadets during their senior year. The Air Force pays the costs incident to this training. Successful completion results in a private pilot's license and further flight training after being commissioned, leading finally to becoming an Air Force pilot.

Inquiries about enrollment or other information should be addressed to the University of Washington, Professor of Aerospace Studies, Clark Hall, Seattle, Washington 98195.

Military Science

Professor of Military Science

Col. James R. Young
149 Savery Hall

Assistant Professors

Jackie E. Bippes, John D. Jamieson, Caleb A. Shreeve, Jr., Paul J. Sousa, Jr., Daniel E. Staber, Jr., Gale R. Zink, Jr.

The Department of Military Science offers the college student five elective options, through Army ROTC, for the attainment of an army officer's commission while pursuing the academic degree of his choice.

Traditional Four-Year Program

Open to incoming freshman students, this program leads to a commission in either the Regular Army or the Army Reserve. Academic studies include courses in military history and tactics, principles of leadership, techniques of instruction, management and staff procedures, logistics, and military law. All military textbooks and uniform items, plus a subsistence allowance during the junior and senior years of \$50.00 per month for a maximum of 20 months, are provided by the U.S. Army. Four years of academic study on campus are required, as well as a six-week summer camp training period between the junior and senior years, for which the cadet is paid for both time at camp and travel expenses to and from the camp location. The program is divided into two courses: the Basic (first and second years) and the Advanced (third and fourth years). Enrollment in the Advanced Course requires selection by the Professor of Military Science. A student chosen for the Advanced Course must sign a contract (with the consent of parents, if under twenty-one years of age) wherein he agrees to complete the course, enlist in the Army Reserve, accept a commission, if offered, and serve on active duty for a period of two years after

commissioning. Recently a three- to six-month option for active duty training with the balance of service in an active Reserve unit has been offered.

Modified Three-Year Program

This program is open to students of sophomore standing. The program is the same as that for the Four-Year Program, except the basic course (first and second years) is compressed into one year.

Special Two-Year Program

This program is open to upper-division or graduate students presently enrolled at the University or to upper-division or graduate transfer students from other colleges. This program requires attendance at a Basic Summer Camp for six weeks between the sophomore and junior years in lieu of the basic (first and second year) course. This basic camp may not be necessary for veterans or others with previous ROTC or military training. Placement credit may be given for prior ROTC or military training toward completion of ROTC courses. The student receives pay while at camp, plus travel pay to and from the camp location. Academic subjects covered in the Two-Year Program are the same as those covered in the Advanced Course of the Four-Year Program. The obligations are the same in both programs.

Two-Year Scholarship Program

This program is open to sophomore students enrolled in the basic course. Selection will be made on a local level by the Professor of Military Science. The Two-Year Scholarship Program provides financial assistance during the Advanced Course (third and fourth years). Each scholarship pays for tuition, books, and laboratory expenses and provides, in addition, \$50.00 per month. All other advantages and obligations are the same as for the Four-Year Scholarship Program.

Four-Year Scholarship Program

Applications for this program should be made while the student is still in high school. Selection of students is made on a nation-wide competitive basis. This program leads to a commission in the Regular Army or the Army Reserve. All tuition, laboratory fees, textbooks, and uniform items, plus retainer pay of \$50.00 per month for a maximum of four years, are provided by the U.S. Army. Four years of academic study on campus are required, as well as a six-week summer camp training period between the junior and senior years, for which the cadet is paid for both his time and travel expense to and from the camp location. Academic studies are identical to those of the traditional four-year program. The student must sign a contract (with the consent of parents, if under twenty-one years of



age), wherein he agrees to complete the program, enlist in the Army Reserve, accept a commission, if offered, and serve on active duty for four years after commissioning.

Flight Training

Flight training is available to interested cadets after completion of the first year of the advanced course. Successful completion of this training may lead to a private pilot's license and assignment as an Army aviator.

Students in the basic program are provided uniforms which are turned in at the completion of the basic course. Students in the advanced program are provided new uniforms which become their personal property when commissioned. Uniforms are worn at all Leadership Laboratory classes and when otherwise specified. At the time of registration all students, except those on scholarships, must make a \$25.00 deposit, which is refunded when the uniform and textbooks are returned undamaged.

Inquiries about enrollment or other information should be addressed to the University of Washington, Professor of Military Science, 149 Savery Hall, Seattle, Washington 98195.

Naval Science

Professor of Naval Science

Capt. Richard B. McNees, USN
309 Clark Hall

Associate Professor

R. A. Foucht, USN
305 Clark Hall

Assistant Professors

Michael V. Clark, Jonathan B. King, Weston G. Moir,
William N. Shellenberger, Carter P. Swenson

The Department of Naval Science offers university students the opportunity to engage in study leading to a commission in the United States Navy or Marine Corps while working toward a baccalaureate degree in an academic field. Two programs are offered.

Navy-Marine College Program

Just prior to the beginning of Autumn Quarter each year, the Professor of Naval Science will accept applications from qualified students for participation in the four-year Naval ROTC College Program. Transfer students who contemplate three or more years in residence may apply. However, Naval ROTC College Program students must agree to complete the four-year Naval Science curriculum, then also agree to accept a

commission in the U.S. Navy Reserve or U.S. Marine Corps Reserve if offered, and to serve on active duty for a period of three years.

A Naval ROTC College student must meet the following general qualifications:

- (1) Be admitted to the University.
- (2) Be a male citizen of the United States between the ages of seventeen and twenty-one on June 30 of the year of entrance.
- (3) Meet physical requirements.

NROTC College Program students pay their own college expenses but receive subsistence pay of \$50.00 per month during their junior and senior years, including the intervening summer. The Navy furnishes the uniforms and textbooks used in Naval Science courses.

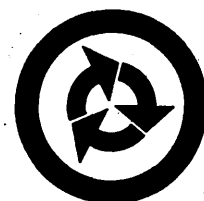
Participating students may be enrolled in any university curriculum leading to a baccalaureate or higher degree. One period of summer training of approximately six to eight weeks' duration is a required part of the NROTC College Program.

Navy-Marine Scholarship Program

Each year a limited number of young men are accepted for the four-year Naval ROTC Navy-Marine Scholarship Program. Selection of students for the scholarship program is based upon a nation-wide competition and selection by a state selection committee. Application must be made by December 1 of the academic year preceding appointment as midshipman. Those selected are appointed as Midshipmen, USNR, and are provided a four-year college education subsidized by the Navy, including all tuition, fees, textbooks, uniforms, and \$50.00 per month subsistence pay. Upon graduation, Midshipmen, USNR, are commissioned as regular officers in the United States Navy or Marine Corps.

All Naval ROTC students take the same naval science courses during the first two years. Students who elect to be commissioned in the Marine Corps take Marine Corps subjects during their third and fourth years. A Flight Instruction Program (FIP) is available for physically qualified students interested in becoming naval aviators. Successful completion of the FIP will result in qualification for a private pilot's license and consideration for assignment to naval flight training and designation as a Naval Aviator.

Further information concerning the Naval ROTC Programs may be obtained by writing the University of Washington, Professor of Naval Science, Seattle, Washington 98195 or by visiting the NROTC Unit located in Clark Hall on the campus.



GRADUATE STUDY THE GRADUATE SCHOOL AND RESEARCH

Officers of the Graduate School

Joseph L. McCarthy, Ph.D.
Dean

Paul W. Hodge
Associate Dean

Thelma T. Kennedy, Ph.D.
Associate Dean

R. W. Moulton, Ph.D.
Associate Dean

Morgan D. Thomas, Ph.D.
Associate Dean

Herman McKinney, M.S.W.
Assistant Dean

Henrietta Wilson, M. A.
Special Assistant

James D. Linse, B.A.
Administrator

Executive Committee of the Graduate School

Joseph L. McCarthy, *Chairman*

R. D. Stevick, *Group I*

S. Moseley, *Group II*

M. N. McDermott, *Group III*

C. F. Keyes, *Group IV*

F. E. Kast, *Group V*

I. M. Fife, *Group VI*

J. W. Prothero, *Group VII*

R. C. Canfield, *Group VIII*

Graduate Faculty Council and Group Operating Committees

(The combined membership of the eight Group Operating Committees comprises the Graduate Faculty Council—Joseph L. McCarthy, *Chairman*)

Group I

E. Behler, L. H. Legters, J. B. McDiarmid, R. D. Stevick *Chairman*), F. J. Warnke

Group II

B. Baskerville, G. A. Falls, G. Kechley, S. Moseley (*Chairman*), G. Varey

Group III

A. G. Anderson, A. Gorbman, J. P. Jans, M. N. McDermott (*Chairman*), I. Namioka

**Group IV**

P. Dietrichson, A. L. Edwards, C. F. Keyes (*Chairman*), S. Ottenberg, R. Warren

Group V

D. F. Henderson, F. E. Kast (*Chairman*), J. E. Kittel, G. G. Mueller, J. Wickman

Group VI

R. Clark, I. M. Fyfe (*Chairman*), A. H. Mattock, M. A. Robkin, D. R. M. Scott

Group VII

E. Alvord, A. M. Gordon, N. B. Groman, D. E. Kelley, J. W. Prothero (*Chairman*)

Group VIII

M. R. Broer, R. C. Canfield (*Chairman*), K. J. Hoffman, A. C. Huitric

GRADUATE STUDY

Graduate study has been offered at the University of Washington for three-quarters of a century. Over the years it has grown steadily in quality, scope, and size.

The Graduate School, which was formally established in 1911, is administratively responsible for graduate study in whatever division of the University such study is undertaken. This involves supervision of student programs that go beyond formal undergraduate work or the work of the professional schools, into areas of advanced training, education, research, and scholarship.

Programs leading to master's and doctor's degrees are offered in seventy-eight departments or other organizational units within twelve schools and colleges of the University. Graduate instruction and the supervision of the research of graduate students are conducted by a Graduate Faculty of more than fourteen hundred senior professors. About seven thousand graduate students are now in residence, seeking their master's or doctor's degrees in the Graduate School at the University of Washington. There are, in addition, some three hundred postdoctoral students in residence.

In addition to its primary role in relation to graduate students, graduate faculty, and graduate study programs and degrees, the Graduate School is also responsible for the administration of certain academic or research activities and facilities of general significance in all or many fields of knowledge throughout the University. The Graduate School is administered through the Office of the Dean, the Executive Committee of the Graduate School, Group Operating Committees, and the Graduate Faculty Council. The Graduate Faculty Council is

composed of representatives elected to eight Group Operating Committees by the members of the graduate faculty, and it and the Executive Committee of the Graduate School serve as the legislative and policy-making bodies of the graduate faculty. The Executive Committee consists of the Dean of the Graduate School and the elected chairman of each of the eight group Operating Committees; it acts as an advisory Group to the Dean and as an administrative committee for the Graduate Faculty Council.

The University of Washington Graduate School recognizes major responsibilities in three closely related fields: teaching, research, and public service.

Highly able students who have completed baccalaureate programs are offered the opportunity to further improve their knowledge, understanding, and ability to create and to practice in their chosen fields. Their achievements may be recognized by the award of the master's degree at the end of one or two years of study, or the doctor's degree at the end of three or more years of study. Students who have completed advanced degree programs usually serve as teachers, research or administrative leaders, or professional practitioners in their respective fields.

In contrast with undergraduate work, graduate study is ordinarily focused quite sharply on some specific field, and the student is expected to develop and demonstrate substantial initiative, mature judgment, and creativeness. Often the graduate student carries on a program in close association with his or her chosen professor in a tutorial-type relationship.

Many diverse programs of graduate study are available. In nearly all of these, two objectives can be distinguished, although their relative importance may differ. In many programs particular emphasis is placed on leading the student to excellence in ability to teach and to create new knowledge by research; the student's achievements are recognized by the award of the Master of Arts, Master of Arts for Teachers, or the Master of Science degree, the Doctor of Philosophy or the Doctor of Arts degree. In other programs emphasis is placed on leading the student to excellence in ability to practice the art of a field or profession; in these cases, achievements are recognized by the award of a more specifically designated degree, such as Master of Nursing or Master of Science in Electrical Engineering or of Doctor of Education.

A program of graduate study normally includes advanced class work and lectures but is particularly characterized by the independent study and research that the graduate student is expected to conduct. The results

of this independent study and research are set forth in a master's thesis or a doctoral dissertation. A master's thesis is a modest contribution to knowledge, or a review or a report on knowledge, or a design, or a composition in the student's field. A doctoral dissertation should set forth a significant contribution to knowledge in the student's field; should be presented in scholarly form; and should demonstrate that the student is now competent to conduct reliable, important, and independent research.

The Graduate School is concerned basically with the fundamental and applied research activities conducted throughout the University, and endeavors to assist in the development of arrangements, funds, and facilities needed to encourage and support the research activities of the professors, students, and other scholars and scientists engaged in investigational work. The Graduate School is also concerned with the maintenance and steady improvement of the public service provided by the University to the state, the region, and the nation. The Graduate School is especially interested in furthering research cooperation with other institutions and with business and industry.

The primary contributions from the University's Graduate School to the community are to be found in those students who have achieved high levels of competence as evidenced by their completion of programs of advanced study, and in the significant research results obtained by these students, their professors, and other scholars and scientists associated with the University.

The Graduate Programs and Graduate Degree Policies

Graduate programs leading to master's and/or doctor's degrees are offered in seventy-eight departments or other organizational units of the University and the names of these programs, the graduate degrees offered, and the names of the Graduate Program Advisers are given in this catalog.

The Graduate Program Adviser

The graduate student's initial work at the University is guided by the Graduate Program Adviser in his or her field. This adviser is a senior member of the faculty who provides or arranges for the provision of responsible advice, guidance, and assistance to students working for advanced degrees in the program or programs offered by the faculty in the department, school, or University unit. The Graduate Program Adviser maintains close familiarity with policies and procedures in the Graduate School and provides overall coordination for the activities within the department. In the absence

of the Graduate Program Adviser, these responsibilities are carried by an Alternate Program Adviser.

Courses for Graduate Students

Courses numbered 500 and above are intended for and restricted to graduate students. Some courses numbered in the 300's and 400's are open both to graduates and to upper-division undergraduates. Such courses, when acceptable to the Supervisory Committee and the Graduate Dean, may be part of the graduate program. The Graduate School accepts credit in approved 300-level courses for the minor or supporting fields only; approved 400-level courses are accepted as part of the major.

Undergraduate students of senior standing who wish to register for a 500-level course must obtain permission from both the instructor of the class and the Dean of the Graduate School.

Pass/Fail Grading for Graduate Students

The following procedures were established on a trial basis, beginning with registration for Spring Quarter 1969, to encourage graduate students to take courses in a field of interest offered outside their major academic units and to provide maximum flexibility in grading for graduate students who have achieved Candidate status.

The trial period for this grading system extends through Spring Quarter 1972. Continuance after that quarter will be determined and announced during the 1971-72 academic year. Students should consult with their Graduate Program Adviser for information and advice about pass/fail grading.

Pass/Fail Grading at the Student's Option

1. With the approval of the Graduate Program Adviser or Supervisory Committee Chairman, graduate students may elect to take any course for which they are eligible offered outside of their major academic unit on the pass/fail system (S,E). The major academic unit is that unit which is authorized to offer graduate degree programs (e.g., Department of History, School of Music, College of Fisheries, Biomathematics Group). In the case of interdisciplinary groups in the Graduate School (e.g., Biomathematics, Drama Arts, Comparative Literature), the faculty of each group will define which courses comprise the major field of the graduate students formally identified with that group.

2. With the approval of their Supervisory Committee Chairman, graduate students who have achieved Candidate status may elect to take any course for which they are eligible on the pass/fail system, beginning the quarter after they become Candidates.



Graduate Degree Programs Offered and Names of Graduate Program Advisers

Field	Graduate Degrees	Graduate Program Adviser	Alternate Graduate Program Adviser
Aeronautics and Astronautics	M.S.A.&A., M.A.&A., M.S.E., Ph.D.	I. M. Fyfe	R. J. Bollard
Anthropology	M.A., Ph.D.	K. E. Read	E. V. Winans
Architecture	M.Arch.	R. Alden	G. Varey
Art	M.A., M.F.A., M.A.T.	W. Brazeau	C. L. Hafermehl
Art History	Ph.D.	M. Rogers	M. Kingsbury
Asian Languages and Literature	M.A., Ph.D.	R. A. Miller	T. V. Wylie
Astronomy	M.S., Ph.D.	G. Wallerstein	K. H. Bohm
Atmospheric Sciences	M.S., Ph.D.	R. G. Fleagle	J. R. Holton
Biochemistry	M.S., Ph.D.	W. W. Parson	J. M. Keller
Biological Structure	M.S., Ph.D.	J. W. Prothero	D. O. Graney
Biology	M.A.T.	I. D. Olsen	R. Olstad
Biomathematics	M.S., Ph.D.	E. B. Perrin	G. J. Paulik
Biomedical History	M.A.	C. Bodemer	
Botany	M.S., Ph.D.	R. B. Walker	V. E. Buck
Business Administration	M.A., M.B.A., D.B.A.	R. A. Johnson	C. A. Sleicher, Jr.
Chemical Engineering	M.S.Ch.E., M.S.E., Ph.D.	R. W. Moulton	R. Vandenbosch
Chemistry	M.S., M.A.T., Ph.D.	N. J. Rose	E. Richey
Civil Engineering	M.S., M.S.C.E., M.S.E., Ph.D.	H. P. Mittet	J. B. McDiarmid
Classics	M.A., Ph.D.	W. C. Grummel	M. Samuelson
Communications	M.A., M.C., Ph.D.	D. R. Pember	E. Behler
Comparative Literature	M.A., Ph.D.	F. Jones	D. Willows
Comparative Physiology	M.S., Ph.D.	A. Gorbman	H. Golde
Computer Science	M.S., Ph.D.	D. Dekker	A. W. Moore
Dentistry	M.S.Den.	S. Schluger	J. R. Crider
Drama	M.A.	J. D. Sydow	J. R. Wolcott
Drama Arts	Ph.D.	G. A. Falls	D. Hellmann
East Asian Studies	M.A.	J. Dull	E. Silberberg
Economics	M.A., Ph.D.	J. Thornton	F. T. Giles
Education	M.A., M.Ed., Ed.D., Ph.D.	R. G. Olstad	D. G. Dow
Electrical Engineering	M.S.E.E., M.E.E., M.S.E., Ph.D.	R. N. Clark	J. D. McCracken
English	M.A., M.A.T., Ph.D.	A. R. Hilen	R. P. Beasley
Epidemiology and International Health	Ph.D.	E. R. Alexander	A. C. DeLacy
Fisheries	M.S., Ph.D.	L. S. Smith	S. P. Gessel
Forest Resources	M.S., M.F.R., Ph.D.	R. I. Gará	H. L. Roman
Genetics	M.S., Ph.D.	W. L. Fangman	J. C. Sherman
Geography	M.A., Ph.D.	G. H. Kakiuchi	S. C. Porter
Geological Sciences	M.S., Ph.D.	J. A. Vance	R. T. Merrill
Geophysics	M.S., Ph.D.	C. F. Raymond	A. Hruby
Germanic Languages and Literature	M.A., Ph.D., D.A.	S. McLean	
History	M.A., Ph.D.	D. H. Pinkney	B. Wenberg
Home Economics	M.A., M.S., M.A.H.Ec., M.S.H.Ec.	M. L. Johnson	R. S. Hunt
Law	L.L.M., M.C.L., Ph.D.	W. L. Shattuck	M. M. Benne
Librarianship	M.Libr., M.Law Libr.	I. Lieberman	F. Newmeyer
Linguistics	M.A., Ph.D.	S. Saporta	R. T. Moore
Mathematics	M.A., M.S., M.S.Math.Stat., M.A.T., Ph.D.	C. R. Hobby	D. E. McFeron
Mechanical Engineering	M.S.M.E., M.S.E., Ph.D.	E. E. Day	E. Nester
Microbiology	M.S., Ph.D.	H. C. Douglas	
Mining, Metallurgical and Ceramic Engineering	M.S.Min.E., M.S.Met.E., M.S.Met., M.S.Cer.E., M.S.Cer., M.S.E., Ph.D.	R. J. Campbell	J. I. Mueller
Music	M.A., M.A.T., M.Mus., D.Mus.Arts, Ph.D.	J. M. Beale	J. Verrall
Near Eastern Languages and Literature	M.A.	N. L. Heer	F. Ziadeh
Nuclear Engineering	M.S.E., Ph.D.	A. L. Babb	K. L. Garlid
Nursing	M.A., M.Nur.	E. Metz	K. J. Hoffman
Oceanography	M.S., Ph.D.	J. C. Lewin	W. O. Criminale
Oral Biology	M.S.	P. J. Keller	I. A. Siegel
Pathology	M.S., Ph.D.	E. Smuckler	E. P. Benditt
Pharmacology	M.S., Ph.D.	D. C. Dyer	A. Horita
Pharmacy	M.S., Ph.D.	J. E. Orr	E. Krupski
Philosophy	M.A., Ph.D.	O. Chateaubriand	S. N. Thomas
Physical and Health Education	M.S., M.S.Phys.Ed.	G. S. Reeves	R. Abernathy
Physics	M.S., Ph.D.	J. S. Blair	J. J. Sabo
Physiology and Biophysics	M.S., Ph.D.	J. G. Skahen	H. D. Patton
Physiology Psychology	Ph.D.	W. L. Makous	E. S. Luschei
Political Science	M.A., Ph.D.	S. A. Scheingold	W. L. Francis
Psychology	M.S., Ph.D.	R. C. Bolles	
Public Affairs	M.Pub.Admin.	B. C. Denny	
Public Health Studies	M.S.Prev.Med.	J. Fox	R. P. Beasley
Radiological Sciences	M.S.Rad.Sci.	K. Jackson	G. Christensen
Rehabilitation Medicine	M.S., M.Occup.Therapy	J. F. Lehmann	W. E. Fordyce
Romance Languages and Literature	M.A., Ph.D.	R. Vernier	M. Penuelas
Russian and East European Studies	M.A.	W. A. D. Jackson	J. E. Augerot
Scandinavian Languages and Literature	M.A., Ph.D.	W. Johnson	S. Arestad
Slavic Languages and Literature	M.A., Ph.D.	L. Micklesen	W. A. Konick
Social Work	M.Soc.Wk.	C. J. MacDonald	J. W. Leigh
Sociology	M.A., Ph.D.	O. N. Larsen	S. Miyamoto
Speech	M.A., M. Sp. Path. and Aud., Ph.D.	D. N. Bennett	P. A. Yantis
Surgery	M.S.	D. H. Dillard	L. C. Wintersheid
Urban Planning	M.Urban.Plan., Ph.D.	A. Rabinowitz	R. D. Shinn
Zoology	M.S., Ph.D.	W. D. Ball	D. S. Farnar

3. For courses in which graduate students elect pass/fail grading, the instructor will record and submit a letter grade (A,B,C,D,E) to the Registrar at the end of the quarter. The Registrar will routinely convert passing letter grades (A,B,C,D) to S for students enrolled on the pass/fail system.

4. Students must indicate at the time of registration whether they wish to take particular courses on the pass/fail system. Students will not be permitted to change their registration from pass/fail to the letter system, nor vice versa, after the normal change of registration period. Once an S grade is given, it may not later be changed except in the case of instructor error.

5. Students may not take courses on the pass/fail system if a letter grade is required in these courses for professional certification (e.g., courses in the College of Education taken for teacher certification).

Pass/Fail Grading at the Instructor's Option

6. Any 500-level course may be graded on the pass/fail system at the instructor's option after consultation with appropriate officers of the academic unit. If such option is elected, *the decision should be made prior to the time of registration and noted on time schedule work sheets*. When such option is elected, the instructor will submit a pass/fail grade to the Registrar for each student in the class at the end of the quarter. The letter system and the pass/fail system should not be mixed in the same class at the instructor's option.

Pass/Fail Grading and Use of the N Grade for 600 (Independent Study or Research) and 700 (Thesis or Dissertation) Enrollments

7. It is recommended that Supervisory Committee Chairmen and instructors assign pass/fail system grades for 600 (Independent Study or Research) and 700 (Thesis or Dissertation) enrollments, except when a series of course registrations from quarter to quarter is involved.

8. When a series of 600- or 700-course registrations from quarter to quarter is involved, an N grade should be given. The N grade signifies that satisfactory progress is apparently being made. N grades should continue to be given until the research, thesis, or dissertation is satisfactorily finished, or until sponsorship of the graduate student has been withdrawn by formal action through the Graduate School. Then the N grade or grades should be changed to the appropriate grade in the pass/fail system.

9. In special circumstances, as determined by the Supervisory Committee Chairman or instructor, the final grade for 600 and 700 enrollments may be in the letter system.

10. Regardless of the grading system used, grades given for 600 (Independent Study or Research) and 700 (Thesis or Dissertation) enrollments will not be considered in computing a student's grade-point average.

Computation of Grade-Point Averages

11. In computing a student's grade-point average, letter system grades (and E grades obtained on the pass/fail system) are considered for 300-, 400-, and 500-level courses. However, S and N grades are not considered, nor are letter system grades (nor E grades obtained on the pass/fail system) for 100- and 200-level courses, nor for 600 (Independent Study or Research) and 700 (Thesis or Dissertation) enrollments.

Right to Petition

12. When an individual situation appears to warrant modification of these procedures, the student should prepare an appropriate petition addressed to the Dean of the Graduate School, and transmit it for comment and/or recommendation to his or her Graduate Program Adviser or Supervisory Committee Chairman.

Scholarship

To be eligible for a degree in the Graduate School, a student must have an average of B (3.00) in *all* courses numbered 300 and above. Students whose work is not of approved quality may be asked by the Dean of the Graduate School to withdraw. On the Quarterly Grade Report and on each student's permanent transcript, all courses numbered 100 through 700, with the grades earned, are listed. However, *grade points* are *not* extended for 100- and 200-level courses and such courses are *not* included in quarter or cumulative grade-point averages. In computing a student's grade-point average, letter system grades (and E grades obtained on the pass/fail system) are considered for 300-, 400-, and 500-level courses. However, S and N grades are not considered, nor are letter system grades (nor E grades obtained on the pass/fail system) for 100- and 200-level courses, nor for 600 (Independent Study or Research) and 700 (Thesis or Dissertation) enrollments.

Language Competence Requirements and Examinations

Communication by use of languages and in other ways is basically important in scholarly work and research. Thus it is expected that each student admitted to the Graduate School has achieved superior competence in the English language; for students coming from non-English speaking countries, this competence is specifically tested.

Competence in one or more languages other than English is generally desirable in relation to all fields of



advanced study and is often required, especially in the scholarly and research-oriented programs leading to the degrees of Master of Arts, Master of Science, and Doctor of Philosophy.

Faculty in a particular graduate academic unit have, for graduate programs in that unit, identified certain foreign languages other than English in which competence may be desirable or helpful, e.g., languages in which a substantial literature exists or which may have special significance in relation to the field, and have specified whether or not a reading competence in one or more of these languages is to be required. Thus, the foreign language competence requirement for graduate students at the University of Washington are those established by the Graduate Faculty in the unit offering the graduate program and reported to the Dean of the Graduate School.

Each student should consult with his or her Graduate Program Adviser for information and advice about desirable or required competence in foreign languages.

To provide for satisfaction of language competence requirements for advanced degrees, the University uses the Educational Testing Service standardized examinations in French, German, Russian, and Spanish, and these standardized examinations will be given at the University and at other places throughout the United States on published dates. Students are urged to acquire and use foreign-language competence as undergraduates or as early as possible in their graduate career. *The ETS examination may be written and passed by undergraduates who are urged to establish foreign language competence before entering the Graduate School.*

For languages other than French, German, Russian, and Spanish, foreign-language examinations will be given in Seattle at the University on the day prior to the ETS examinations.

Residence

The residence requirement for the master's degree is one year (three full-time quarters). For the doctor's degree it is three years, two of them at the University of Washington, and one of the two years must be spent in continuous full-time residence (three out of four consecutive quarters). The residence requirement for the doctor's degree cannot be met solely with summer study.

A full quarter of residence is granted for any quarter in which at least 9 credits in graduate course, research, thesis, or dissertation work are acceptably completed.

Residence credit for students carrying less than 9 credits per quarter is figured by combining the part-time

quarters to total 9 or more credits to make a full residence quarter equivalent.

Only courses numbered 400, 500, and 600 can be applied to residence and course credit in the major field for advanced degrees. Courses numbered 300 are not applicable to residence or course credit toward advanced degrees except when applied by permission toward the graduate minor or supporting courses. Courses numbered below 300 are not applicable to residence or course credit for advanced degrees.

Final Quarter Registration

A student must be registered as a full-time or part-time student at the University during the quarter the master's or doctor's degree requirements are completed.

A student who has been approved for the Tentative Degree List for a particular quarter but who does not complete the requirements by the published deadlines (two weeks prior to the end of the quarter), but who does complete all the requirements by the last day of that quarter, receives the degree the following quarter without further registration.

Continuous Enrollment

A graduate student, from the time of first enrollment in the Graduate School of the University of Washington, is required to enroll and be registered each quarter, including Summer Quarter, until the completion of all requirements for the graduate degree for which he or she is working, including filing of the thesis or dissertation, the passing of the master's or doctor's final examination, and the awarding of the degree. A graduate student must be enrolled and registered as a full-time student or as a part-time student, or enrolled as an on-leave student. Registration for extension or correspondence courses at the University does not satisfy the continuous enrollment requirement. Failure to maintain continuous enrollment and registration as a full-time or a part-time, or enrollment as an on-leave student will be taken by the University to signify the student's resignation from the Graduate School. Should the student later wish to resume studies, an application for readmission to the Graduate School must be filed in person or by mail, in accordance with the regularly published closing dates for the quarter. He or she must enroll and register during the usual enrollment and registration period. If any other institution has been attended during the period when the student was not registered at the University of Washington, official transcripts in duplicate of the work must be submitted. An application for readmission will carry no preference and will be treated in the same manner as an applica-

tion for initial admission, including the requirement of payment of the \$10.00 application fee.

A student must be enrolled and registered as a regular full-time or part-time student at the University for the quarter in which the degree requirements are completed. (See "Final Quarter Registration" information.)

If a graduate student is enrolled and registered as a full-time student or a part-time student, he or she pays the usual fees and is ordinarily engaged in course and/or research work on the campus as a regular student supervised by the Graduate Program Adviser or the GPA's representative, or by the chairman of the student's Supervisory Committee.

In unusual cases, a graduate student may need to work *in absentia* at a place distant from the campus and yet actively continue in correspondence or conferences with professors at the University and proceed with the thesis or dissertation research. In this situation the student enrolls and registers as a full-time student *in absentia* or a part-time student *in absentia* and pays the usual fees for a full-time student or a part-time student, after previously having had a petition for *in absentia* work approved by his Graduate Program Adviser or his Supervisory Committee Chairman. Periods of *in absentia* registration are not counted toward completion of the requirements for residence by graduate students on the campus of the University of Washington.

If a graduate student in good standing plans to be away from the University and out of contact with the University faculty and facilities for a period of time, usually not to exceed four successive quarters, the student must enroll and register as an on-leave student after he or she has had a petition for on-leave status approved by the Graduate Program Adviser or the Supervisory Committee Chairman, and by the Dean of the Graduate School. This type of enrollment maintains a place for the student as a member of the Graduate School and permits him or her to use the University Library and to sit for foreign language competence examinations, but does *not* entitle the student to any of the other University privileges of a regularly enrolled full-time student or part-time student. An on-leave student petitions for on-leave no-credit status, and pays a nonrefundable fee of \$5.00 (except for Summer Quarter only) for enrollment as an on-leave student; this fee covers four successive academic quarters or any single part thereof.

A graduate student who is registered as a full-time or part-time student for *Spring Quarter* will be put automatically into on-leave status for Summer Quarter *only*; and a graduate student who is officially on-leave for *Spring Quarter* will automatically have his or her on-

leave status extended for Summer Quarter *only*. (The above applies only to a graduate student not registered as a full-time or part-time student for Summer Quarter.) However, a student in either case set forth above must be registered at the University as a full-time or part-time student for the following Autumn Quarter or must officially petition for on-leave status for Autumn Quarter; otherwise the student will be considered resigned from the Graduate School.

On-leave students returning to the University on or before the termination of the period of their leave should enroll and register in the usual way as full-time students or part-time students and by this registration will cancel any remaining leave period. If circumstances require a later leave of absence, the student must petition and proceed again in the same manner as for an initial leave of absence. It is recommended that returning on-leave students contact the University for current procedures relative to advance fee payment deadlines and other pertinent enrollment policies.

Graduate Student Classifications

The following system classifies graduate and postdoctorate students into four categories based upon the extent of their advancement toward or completion of graduate degrees:

Category Number	Title	Description
1	Premaster	Admitted to the Graduate School, but has not yet completed a master's degree or the equivalent, i.e., 36 quarter credits or more of course or research work applicable to an advanced degree
2	Intermediate	Completed a master's degree or the equivalent, but has not yet been admitted as a Candidate for a doctor's degree, i.e., has not yet completed the General Examinations
3	Candidate	Admitted as a Candidate, but has not yet completed a doctor's degree
4	Postdoctorate	Has completed a doctor's degree

When a graduate student is first admitted to the Graduate School, he or she is placed in the classification appropriate in recognition of the highest academic degree which the admittee then holds. When a graduate student officially completes the master's degree, or General Examinations, his or her classification is changed appropriately by actions in the offices of the Graduate School and the Registrar.



When a Premaster graduate student officially completes 36 quarter credits or more of course or research work applicable to an advanced degree, it is ordinarily considered that the student has completed graduate work equivalent to the master's degree, and the student's classification is changed to Intermediate, usually after recommendation made by the Graduate Program Adviser followed by actions in the offices of the Graduate School and the Registrar.

When an Intermediate graduate student satisfactorily completes the doctoral General Examinations, the student's classification is changed to Candidate by actions in the offices of the Graduate School and the Registrar.

The Master's Degree

Summary of Requirements

All aspirants for the master's degree must meet the following requirements:

1. Under a thesis program, a minimum of 36 credits (27 course credits and ordinarily at least 9 credits of thesis) must be presented. Under a nonthesis program, a minimum of 36 credits of course work is required.
2. At least 18 of the minimum 36 credits for the master's degree must be for work numbered 500 or above. (In a thesis program, 9 of the 18 must be course credits and 9 may be for thesis 700.)
3. A minimum of three full-time quarters of residence credit must be earned. Part-time quarters may be accumulated to meet this requirement. (See detailed information under "Residence.")
4. A certificate of proficiency in a foreign language if one is required for a particular degree.
5. A thesis, approved by the Supervisory Committee, must be prepared (unless specifically excepted in a particular program). Students must register for thesis.
6. A final master's examination, either oral or written, as determined by the student's Supervisory Committee, must be passed.
7. Any additional requirements imposed by the Graduate Program Adviser in the student's major department or by the student's Supervisory Committee must be satisfied.

While every master's student is expected to take some work outside the major department, the Graduate Program Adviser in the major department or the student's Supervisory Committee determines the requirements for supporting courses. The student should consult with the Supervisory Committee in planning requirements for the minor.

8. The graduate student must make application for the master's degree at the Graduate School Office within the first two weeks of the quarter in which he or she expects the degree to be conferred, in accordance with "Application for the Master's Degree" as described below.

9. The graduate student must be registered either as a full-time or part-time student at the University for the quarter in which the requirements for the degrees are completed. (See detailed information under "Final Quarter Registration.")

10. All work for the master's degree must be completed within six years. This includes applicable work transferred from other institutions.

11. Students must satisfy the requirements for the degree that are in force at the time the degree is to be awarded.

Preparation and Advising

Graduate students are expected to be appropriately prepared for the graduate program into which they are admitted and should confer with the Graduate Program Adviser in their field, or with the Graduate Program Adviser's representative, in planning their program and frequently thereafter during the course of their graduate study.

Transfer and Extension Credit

A student pursuing a graduate program leading to the master's degree may transmit a written petition to the Dean of the Graduate School requesting permission to transfer up to 9 graduate quarter credits taken while a graduate student in another recognized Graduate School to be applied toward the master's degree here. The petition must be accompanied by a written recommendation from the Graduate Program Adviser.

In the same manner, the student may petition the Dean of the Graduate School for permission to apply up to 6 credits of work taken in Extension Classes, *but only if taken at the University of Washington and if taken after the student has been officially admitted to the Graduate School here.*

If approved, then 9 credits of transfer work *or* 6 credits of University of Washington extension credit *or* a combination of transfer and extension credits not exceeding 9 credits may be applied to the master's degree. The minimum residence requirement of three quarters at the University of Washington may not be reduced by transfer and/or extension credit.

Neither credit by Correspondence nor by Advanced Credit Examinations is acceptable.

Examination

As soon as is appropriate, but not later than the time when the student's application for the degree has been approved, the faculty in the student's major department appoints a Supervisory Committee ordinarily consisting of two or three members but not more than four. The committee chairman arranges time and place of the final examination, the results of which must be reported by the Graduate Program Adviser to the Graduate School Office at least two weeks before the date on which the degree is to be conferred. The examination may be oral or written, and all members of the Supervisory Committee must certify its results. If the examination is not satisfactory, the Committee may recommend to the Dean of the Graduate School that the student be allowed to take another examination after an interval of further study.

Thesis

The master's thesis should be evidence of the graduate student's ability to carry out independent investigation and to present the results in clear and systematic form. Two copies of the thesis, normally written in the English language, along with forms signed by the members of the Supervisory Committee from the major department, must be deposited in the Graduate School Office at least two weeks before the end of the quarter in which the degree is to be conferred. The faculty in the department may require the student to present an additional copy for its own use. Instructions for the preparation of theses in acceptable form may be obtained at the Graduate School Office.

Nonthesis Programs

Some departmental faculties have arranged programs for the master's degree that do not require the preparation of a thesis. These programs normally include a more comprehensive plan of course work or more extensive examinations than are required in thesis programs, or they may include some approved research activity in lieu of a thesis.

Application for the Master's Degree

The student must make application for the master's degree at the Graduate School Office *within the first two weeks of the quarter in which he expects the degree to be conferred*. The filing of the application is the responsibility solely of the student. When the application is received, the student's record will be reviewed in the Graduate School Office. The previous work taken by the student, together with the current registration as planned with the approval of the Graduate Program Adviser in the student's department, must meet the requirement for the degree if the application

is to be approved. The applicant will be notified promptly as to whether or not the general requirements for the degree will be satisfied at the end of the quarter and, if approved, the application will be forwarded to the departmental Graduate Program Adviser.

The master's application, reporting the final examination results, and signed by the student's Supervisory Committee certifying that all departmental requirements have been met, must be returned by the Graduate Program Adviser to the Graduate School Office at least two weeks before the end of the quarter of the initial application, if the degree is to be conferred that quarter.

Master's applications are valid for *two consecutive quarters* and if requirements for the degree are not completed during the quarter of the initial application, the student's application may be retained by the Graduate Program Adviser for the quarter *immediately* following (e.g., Autumn to Winter, Winter to Spring, Spring to Summer, Summer to Autumn) and returned to the Graduate School Office two weeks before the end of the second quarter. Thereafter, the application will be void and the student must fill out a *new* application for the degree in the Graduate School Office during the first two weeks of the quarter in which the degree is to be completed.

The student and the departmental Graduate Program Adviser should be thoroughly acquainted with the requirements for the particular degree.

Master's Degrees for Teachers

It has become increasingly apparent that there is need for master's degree programs for experienced teachers that would focus upon the fields of knowledge normally taught in the common schools and in the community colleges, and that would provide alternatives to the Master of Arts or Master of Science degree programs emphasizing particular fields of knowledge and an introduction to research, and to the Master of Education degree program emphasizing some specialization in education.

In an effort to satisfy this need, two special opportunities for graduate study emphasizing school and community college subject matter fields are now available at the University—a second pattern for the Master of Education degree program, and programs leading to the degree of Master of Arts for Teachers. (M.A.T. programs are now offered in Art, Biology, Chemistry, English, Mathematics and Music; see index under "Master of Arts for Teachers" for reference to program descriptions.)



The types of programs now available for teachers at the University of Washington may be described briefly as follows:

The *Master of Arts* and the *Master of Science* programs provide for a concentration upon a subject matter field and for an introductory experience in creative scholarship and research. Two patterns are now to be offered under the *Master of Education* program, one designed to provide for concentration upon such subjects as elementary education, educational administration, and others within the field of education; the second, designed for specialized study of a teaching field along with appropriate additional work within the field of education. Programs leading to the degree of *Master of Arts for Teachers* are intended to provide experienced teachers with additional avenues for broad, continuing study in and related to, one of the fields of knowledge.

The Candidate's Certificate

The candidate's certificate gives formal recognition of the successful completion of a very significant step toward the doctor's degrees awarded through the Graduate School: Doctor of Philosophy, Doctor of Arts, Doctor of Business Administration, Doctor of Education, and Doctor of Musical Arts.

Aspirants for these degrees who have passed the General Examinations for admission to candidacy and who have completed all requirements for the degree except the dissertation and the Final Examination are awarded the appropriate candidate's certificate: Candidate in Philosophy (Ph.C.), Candidate in Arts (C.A.), Candidate in Business Administration (C.B.A.), Candidate in Education (Ed.C.), and Candidate in Musical Arts (C.M.A.).

When an aspirant for the doctor's degree has been officially admitted to candidacy as described in the following section, under the heading "Admission to Candidacy for the Doctor's Degree," a candidate's certificate signed by the President of the University and the Dean of the Graduate School will be transmitted to the aspirant in recognition of the achievement of the status of Candidate.

The Doctor's Degree

The doctor's degree is by nature and tradition the highest certificate of membership in the academic community. As such, it is meant to indicate the presence of superior qualities of mind and intellectual interests and of high attainments in a chosen field. It is not conferred merely as a certificate to a prescribed course of study and research, no matter how long or how

faithfully pursued. All requirements and regulations leading to the doctor's degree are devices whereby the student may demonstrate his present capacities and future promise for scholarly work.

Summary of Requirements

In order to qualify for the doctor's degree, the student must meet the following *minimum* requirements:

1. Complete a program of study and research as planned by the Graduate Program Adviser in the student's major department or college, and the Supervisory Committee. Half of the total program, including the dissertation, must be credits numbered 500 or above. Every student is expected to take some work outside the major field, and the Supervisory Committee determines the requirements for minors and supporting courses.
2. Present a minimum of three academic years of resident study (see detailed information under "Residence"), two of them at the University of Washington with at least one year in continuous full-time residence. (The continuous year may be satisfied with three out of four consecutive full-time quarters completed at the University of Washington and normally is completed prior to the General Examination.)
3. Demonstrate a reading knowledge of one or more foreign languages related to the major field of study if such is required for the student's particular degree program. (The student should consult with the Graduate Program Adviser or the Supervisory Committee Chairman for information and advice about the foreign language competence required for his or her program.)
4. Pass creditably a General Examination in the major field and, when a part of the program, in the minor field with which it is concerned.
5. Prepare a dissertation that is a significant contribution to knowledge and which clearly indicates training in research. Credit for the dissertation ordinarily should be at least one-third of the total credit. The Candidate is expected to register for a minimum of 27 credits of dissertation over a period of at least three quarters. Normally, two of these three quarters must come after the student passes the General Examination and before a warrant is authorized for the Final Examination.
6. Pass creditably a Final Examination, which is usually devoted to the dissertation and the field with which it is concerned.
7. Complete all work for the doctor's degree within ten years. This includes applicable work from the master's degree and work transferred from other institutions.

8. Register as a regular full-time or part-time student at the University for the quarter in which the degree requirements are completed. (See detailed information under "Final Quarter Registration.")

9. Satisfy the requirements that are in force at the time the degree is to be awarded.

Preparation and Advising

Graduate students are expected to be appropriately prepared for the graduate program into which they are admitted.

On initial admission to the Graduate School, a graduate student should confer immediately with the departmental Graduate Program Adviser or the Graduate Program Adviser's representative in planning his or her program. Frequent conferences should be held thereafter during the course of his graduate study.

Special Individual Ph.D. Programs

The University, through special individual Ph.D. programs in the Graduate School, makes provision for exceptionally able students whose objectives for study toward the Ph.D. degree do not fall within the offering of any one academic unit authorized to offer a Ph.D. program.

An unusually well-qualified graduate student, who has already been admitted to an academic unit of the University and is enrolled therein and who takes the initiative to carefully plan an appropriate program of studies, may request permission to pursue such an individual Ph.D. program.

An interested graduate student may approach a graduate faculty member qualified to provide guidance. The professor, if it is agreed that the program is feasible and desirable, gathers a Special Advisory Committee consisting of at least three, but usually not more than five, other members of the graduate faculty who represent the student's various fields of interest. This committee must include professors from at least two academic units of the University. Before the student is permitted to embark on the program, he or she must obtain the approval of the Dean of the Graduate School.

The student addresses a special individual Ph.D. program proposal, accompanied by the endorsement of the Special Advisory Committee, to the Dean of the Graduate School. A proposal form and additional information may be obtained at the Graduate School Office.

The Degree of Doctor of Arts

The Council of Graduate Schools in the United States has declared as a matter of policy that "Preparation at

the doctoral level for a career in the practice of undergraduate college teaching, ordinarily in one of the fields of the humanities or the social sciences or the natural sciences, may be recognized by the award of the degree of Doctor of Arts." The Graduate School of the University of Washington, in recognition of the fact that for those who look forward to a career of professional practice in undergraduate or community college teaching and who desire to carry their preparation beyond the master's degree, further study leading to the Doctor of Arts (D.A.) may be appropriate. Thus, policy has been approved to record that the Doctor of Arts degree may be offered at the University by the faculty in specifically authorized graduate units, and general characteristics expected in graduate programs that may be offered leading to this degree have been established.

The faculty in Germanics has been authorized to offer a program leading to the D.A. degree and this program is described in the Germanics program section. Faculty in several other fields are considering or seeking authorization for D.A. programs.

Appointment of Doctoral Supervisory Committee

As soon as is appropriate, but not later than two quarters prior to the time the warrant for the General Examination is presented for approval to the Dean of the Graduate School, the Graduate Program Adviser will request the Dean of the Graduate School to appoint a Supervisory Committee, which will include a Graduate Faculty Representative, to assume general sponsorship of the graduate student. All members of the Supervisory Committee shall be members of the University of Washington Graduate Faculty, except that one person who does not belong to the University of Washington Graduate Faculty may be appointed as a regular voting member. Establishment of a doctoral Supervisory Committee is taken to mean that, in the opinion of the faculty in the graduate student's field, the graduate student's background of study and preparation and achievement is sufficient now to justify his or her entering into the program of doctoral study and research.

Admission to Candidacy for the Doctor's Degree

At the end of two years of graduate study, and after successful demonstration of foreign language proficiency, if required, the Chairman of the Supervisory Committee may present to the Dean of the Graduate School, for approval, a warrant permitting the student to take the General Examinations for admission to candidacy for the doctor's degree. This means that, in the opinion of the Committee, the student's background of study and preparation is sufficient to justify the under-



taking of the examinations. The warrant should indicate time, place, and manner of examination, and must be received at least two weeks prior to the proposed examination date. The warrant is approved by the Dean of the Graduate School only after the prescribed requirements of residence and study have been met. If the examination is oral, a majority of the examining committee must be present during the entire examination.

If the student's performance in his General Examinations is judged by his Supervisory Committee to be satisfactory, then a warrant certifying the successful completion of the General Examinations is filed in the Graduate School Office by the Chairman of the student's Supervisory Committee.

Thereafter, the student is identified and designated as a Candidate for the appropriate doctor's degree and is awarded the Candidate's certificate described earlier in this section. After achieving Candidate status, the student ordinarily devotes his or her time primarily to the completion of research for the dissertation and to preparation for the Final Examination.

Normally, a student must be registered at least two quarters at the University of Washington after passing the General Examinations and before a warrant is authorized for the Final Examination.

Dissertation and Final Examination

The Candidate must present a dissertation demonstrating original and independent investigation and achievement. The dissertation, normally written in the English language, should reflect not only mastery of research techniques but also ability to select an important problem for investigation and to deal with it competently. Requirements for the preparation of the dissertation in acceptable form may be obtained from the Graduate School Office.

When the Supervisory Committee believes that the doctoral Candidate is prepared to take the Final Examination, the Dean of the Graduate School is asked to designate a Reading Committee from among the members of the Supervisory Committee. Using forms provided by the Graduate School, the Reading Committee prepares a report briefly summarizing the distinctive achievement of the research, the methods used, and the results. If the report is favorable and is presented at the Graduate School Office two weeks before the Final Examination date, and if the Candidate has met all other requirements, a warrant authorizing the Final Examination is issued by the Dean of the Graduate School.

The Reading Committee report is not binding upon the Supervisory Committee, but is intended to ensure that, except for minor alterations, the dissertation is ready for final presentation. The Dean of the Graduate School returns the Reading Committee report to the Supervisory Committee, together with the warrant for the Final Examination, and, upon approval by the Supervisory Committee at the time of the Final Examination, it is bound with the dissertation.

If the Final Examination is satisfactory, the Supervisory Committee signs the Graduate School's warrant and returns it at least two weeks before the end of the quarter in which the degree is to be conferred. If the examination is unsatisfactory, the Supervisory Committee may recommend that the Dean of the Graduate School permit a second examination after a period of further study.

Publication of Doctoral Dissertations

All doctoral dissertations are published in full on microfilm. Two weeks before the end of the quarter in which the degree is to be conferred, the Candidate must present two copies of his dissertation at the Graduate School Office. Each copy is to be accompanied by a copy of the Reading Committee report and an abstract, not exceeding 600 words in length, which has been approved by the Supervisory Committee at the time of the Final Examination. A receipt for the \$25.00 publication charge must be shown when the dissertation is presented.

Abstracts are published in full in the publication *Microfilm Abstracts*, and the manuscript copies of the dissertations are kept on file in the University Library. A positive of each microfilmed dissertation is sent to the Library of Congress to be entered in its subject and author file, and the negative is retained by University Microfilm of Ann Arbor, Michigan, which provides additional microfilm copies on order.

The Candidate signs the necessary publication agreement at the time the dissertation is presented at the Graduate School Office and, if the student wishes application for a copyright, the copyright may be made at that time. Publication in microfilm does not preclude other forms of publication.

Admission to the Graduate School

Regular Graduate Student Status

In general, properly qualified students who are graduates of the University of Washington or of other colleges or universities of recognized rank are eligible to apply to the Graduate School. However, all current and prospective students should realize that the Univer-

sity is now operating under a policy of restricted enrollment, and registration is contingent on available space and facilities.

The primary criterion for admission to the Graduate School is the applicant's apparent ability, as decided by the University, to progress satisfactorily in a graduate degree program. The applicant's scholastic record is of major importance and, ordinarily, the applicant should have at least a B or 3.00 grade-point average for the courses taken during the junior and senior years of his undergraduate study. He should also show completion of an undergraduate program appropriate as preparation for graduate study in his chosen field. Consideration will also be given to other evidence that may be available.

In some cases, an applicant may give promise of making satisfactory progress in graduate work although his undergraduate grade average may be less than B or 3.00 or his undergraduate preparation may be inadequate. In these cases and other unusual cases an applicant may be admitted to the Graduate School on the favorable recommendation of the appropriate Graduate Program Adviser with approval by the Dean of the Graduate School. Disadvantaged students who believe they may qualify under this provision are encouraged to apply.

In all cases, the University will be able to grant admission only if sufficient faculty and facilities are available to provide for the applicant's program.

Admission to the Graduate School usually signifies admission into a particular program of graduate study leading to a master's degree or the equivalent, or into post-master's study if the student admitted has already received a master's degree or successfully completed equivalent graduate study. Acceptance of a graduate student into a program of study leading to a doctor's degree is *not* implied by admission to the Graduate School but is usually signified by the appointment of a doctoral Supervisory Committee for a graduate student who has been previously admitted to the Graduate School and has demonstrated the apparent ability, as decided by the University, to progress satisfactorily in a doctor's degree program.

Ordinarily, only students who have been admitted to the Graduate School are permitted to enroll in courses numbered 500 or above and to gain credits applicable to the fulfillment of advanced degree programs.

Students are urged to acquire foreign language competence as undergraduates. The Educational Testing Service (ETS) examination may be written and passed by

undergraduates and used to establish their foreign language competence before entering the Graduate School.

Admission to the Graduate School provides the opportunity for continuance of graduate study and research only for the period during which the graduate student maintains satisfactory performance and progress toward completion of his graduate degree program, along with a status of physical and mental health approved by the University. The Dean of the Graduate School may alter the status of a graduate student.

Visiting Graduate Student Status

A student who wishes to enroll for a single summer session or a single quarter in the Graduate School at the University of Washington, and who intends thereafter to return to the graduate school in which he is carrying forward his program of studies for an advanced degree, may be admitted as a Visiting Graduate Student. This admission is contingent on available space and facilities.

He must have been officially admitted to another recognized graduate school and be in good standing and actively pursuing a graduate program at present or during the past ten years at that institution. He need not submit a full transcript of his credits, but must apply for admission, pay the \$10.00 admission application fee, and ask the dean of his graduate school to certify as to his status on a special form titled "Visiting Graduate Student—Certificate of Status," which may be obtained by writing to the Graduate Admissions Office at the University of Washington, Seattle, Washington 98195.

Admission to the University of Washington as a Visiting Graduate Student *does not guarantee* admission to any particular course of study. A visiting graduate student will be permitted to register only in those courses for which he is judged to be eligible by a faculty adviser or the instructor in the course, and if space is available to accommodate his registration.

For any student admitted on these bases, it is understood that his registration shall terminate at the end of the single quarter or the single summer session for which he is enrolled. If at any later time he wishes to apply for admission to the Graduate School of this University to work toward a degree, he must make formal application and submit complete credentials. If a visiting graduate student is later given formal admission and enters upon work toward a degree at the University of Washington, he may petition the Dean of the Graduate School for allowance of credit for courses taken as a visiting graduate student to apply to the work for such a degree.



Admission Procedures

Requests for the form "Application for Admission to the Graduate School" should be addressed to the Graduate Program Adviser of the department in which the student expects to pursue a program of study. Other correspondence relative to admission procedures should be addressed to the University of Washington, Graduate Admissions Office, Administration Building, Seattle, Washington 98195.

Each application for admission to the Graduate School as a regular graduate student or as a visiting graduate student is subject to an application fee of \$10.00. Payment must accompany the application (U.S. dollars only). This fee is not refundable and is not credited against any other fees charged by the University.

Regular Graduate Student

The application for admission form, the required transcripts in duplicate, and the \$10.00 admission application fee must be filed, in accordance with instructions appearing on the application form, prior to the following dates in order to be assured of consideration for admission to the quarter for which application is being made: April 1 for Autumn Quarter, October 1 for Winter Quarter, January 1 for Spring Quarter, April 1 for Summer Quarter. These dates are subject to change by the University and an early application is advised.

The foregoing dates apply to new students as well as to former students of the University who have not attended since receiving their baccalaureate degrees. Former students must apply as new students for admission to the Graduate School or for admission to an undergraduate college as a fifth-year student. In some cases, departments suggest that applications be submitted earlier than the dates herein set forth. (Please note in this catalog the section pertaining to the appropriate department.)

When the required application forms, official credentials, and the \$10.00 admission application fee have been received, an evaluation will be made and the applicant will be notified of his admission status.

All records become a part of the official file and can be neither returned nor duplicated for any purpose. A student should obtain an additional copy of his official credentials to keep in his possession for advisory purposes. Failure to submit complete credentials will be considered a serious breach of honor and may result in permanent dismissal from the University.

General information and instructions for registration are mailed to new students with the notice of admission. In the event of a discrepancy, these instructions super-

sede those found in earlier publications. *The University assumes no responsibility for students who do not apply the information or observe the instructions or for applicants who come to the campus before they have been officially notified of their admission.*

The admissions credentials of applicants who do not register for the quarter to which they have been admitted are normally retained in the Graduate Admissions Office for a period of one year from the date of application. At the end of this period, credentials on file are discarded unless the applicant has notified the Graduate Admissions Office of a continued interest in attending the University. When an applicant who has served this notice wishes to reactivate admission procedures, he must submit a new application form together with the \$10.00 admission application fee in advance of the application closing date for the quarter desired. Appropriate credentials from the prior file may be used. Should a student wish to renew the application after the one-year lapse, a new application and new credentials must be submitted and the \$10.00 admission application fee paid in advance of the dates given above for the quarter desired.

University of Washington students who are within 6 credits of completing their undergraduate work and who otherwise meet the requirements for admission to the Graduate School may register the quarter just prior to admission to the Graduate School for as many as 6 credits in graduate courses in addition to their 6 credits of undergraduate work. This registration and these arrangements must receive prior approval by the Graduate School; however, students concerned will not be reclassified as graduates until the bachelor's degree has been granted and after their official admission to the Graduate School. Only under these circumstances may graduate work taken as an undergraduate be applied toward an advanced degree. Further registration for graduate work is contingent upon completion of the requirements for the bachelor's degree.

Foreign Students

Students educated abroad are expected to meet the same general requirements as all other applicants educated in American schools. The admission application form, official credentials, and the \$10.00 admission application fee must be received in the Graduate Admissions Office at the University of Washington before the closing dates for domestic graduate students. In addition, applicants must demonstrate a satisfactory command of English and must have sufficient funds available in the United States to meet their expenses. The \$10.00 fee which must accompany the admission application must be payable in United States currency

in the form of an International Postal Money Order, a bank draft on a United States Bank, or an American Express Check.

Veterans

Veterans and children of deceased or totally disabled veterans must meet the general admission criteria and follow the general procedures outlined for all applicants. Applications for and questions about government aid should be addressed to a Veterans Administration Regional Office.

Visiting Graduate Students

The "Application for Admission to the Graduate School" form, the "Visiting Graduate Student—Certificate of Status" form, appropriately completed and signed by the dean of the applicant's "home" graduate school, and the \$10.00 admission application fee must be filed with the Graduate Admissions Office prior to the following dates: April 1 for Autumn Quarter, October 1 for Winter Quarter, January 1 for Spring Quarter. For Summer Quarter, the final date for filing applications for admission with nonmatriculated standing is announced in the *Summer Quarter Bulletin*.

University of Washington Seniors

University of Washington students who are within 6 credits of completing their undergraduate work and who otherwise meet the requirements for admission to the Graduate School may register the quarter just prior to admission to the Graduate School for as many as 6 credits in graduate courses in addition to their 6 credits of undergraduate work. These arrangements must receive prior approval by the Graduate School.

Second Bachelor's Degree and/or Standard Teaching Certificate

Students who wish to obtain a second bachelor's degree and/or Standard Teaching Certificate register as fifth-year students in the appropriate undergraduate college, not in the Graduate School.

Registration in the Graduate School

A regular graduate student is a student who fulfills the following requirements: (1) He or she has been granted regular admission to the Graduate School; (2) his or her current program of studies is satisfactory to the Graduate Program Adviser; (3) he or she has received medical clearance from the Student Health Service; and (4) he/she has completed all of the required steps for registration, including the depositing of registration materials at Sections and the payment of tuition and fees.

Graduate students are required to maintain continuous enrollment from the time of their first registration until completion of the advanced degree. (See section on *Continuous Enrollment*.)

Visiting Graduate Students follow regular registration procedures.

Registration Procedure

All students currently attending the University who wish to attend a succeeding quarter must participate in advance registration and pay fees by the stated deadline. This would include students registered for Spring Quarter who wish to attend Summer Quarter and/or Autumn Quarter. Students are held responsible for knowing and observing the registration procedures, dates, and deadlines which appear in this catalog, in *Official Notices*, in the *University of Washington Daily*, and on campus bulletin boards.

New students are given appointments and directions for registering when they are notified of admission.

Advising

After notification of admission and before registration, the student should confer with the departmental Graduate Program Adviser about the program for his or her current registration, which must be approved by the Graduate Program Adviser before it is presented at Sections.

As soon as the Supervisory Committee is appointed, the student should meet with this committee and work out plans for the entire graduate program. It is primarily to this committee, and especially the chairman of his Supervisory Committee and to the Graduate Program Adviser in the department, that the student must look for individual counsel, guidance, and instruction in the scholarly study and research which characterize graduate work. The programs of students employed in the University or elsewhere will be limited. Students who are employed full time may not register for more than 6 credits.

Changes in Registration

After students have registered, they cannot change their schedules except with permission of the appropriate Graduate Program Adviser or Supervisory Committee Chairman. No student is permitted to make a registration change that involves entering a new course after the first calendar week of the quarter.

Financial Aids: Assistantships, Associateships, Fellowships, Loans, and Employment

Students applying for fellowships, traineeships, and assistantships or associateships must make certain that complete transcripts and other credentials are on file by February 15 (earlier submission of applications and supporting documents is urged by all and required by some departments). Awards and appointments are usually made about April 1. Application forms may be



secured by writing to the Graduate Program Adviser of the appropriate department.

Fellowships, Traineeships, and Scholarships

Fellowships and traineeships carrying stipends ranging up to \$3,000, and also certain scholarships, are available through the Graduate School or through the graduate departments to outstanding students in all fields of study leading to advanced degrees. These include National Defense Education Act Title IV Fellowships, National Defense Foreign Language Title VI Fellowships, National Science Foundation Traineeships, and Summer Traineeships for Graduate Teaching Assistants, a number of National Institutes of Health and National Institutes of Mental Health Traineeships and some fellowships awarded under specific grants and bequests. Application forms may be obtained from the Graduate Program Advisers in the departments or from the Graduate Fellowship and Assistantship Division in the Graduate School Office.

The University also participates in the fellowship programs of the National Science Foundation, the National Institutes of Health, the National Institute of Mental Health, the Woodrow Wilson National Fellowship Foundation, the Danforth Foundation, and other agencies, foundations, and institutes. Such fellowships are awarded on a national competitive basis, and application must be made directly to these foundations or organizations.

Foreign Student Scholarships are awarded by the University of Washington each academic year to one-hundred worthy students from other countries who have been enrolled at the University of Washington for one academic year. These scholarships are not available for the Summer Quarter. The awards are made on the basis of the academic record of the student, recommendations from his or her professors, and the need for such assistance. These scholarships cover tuition only and are administered by the Foreign Exchange Scholarship Committee, International Services Office, University of Washington, Seattle, Washington 98195, U.S.A.

Graduate Student Service Appointments

The University provides for the employment of many graduate students as teaching and research and staff assistants, predoctoral associates, predoctoral instructors, and predoctoral lecturers. Nearly two thousand such appointments were made during the past year.

A detailed description of the arrangements in effect with respect to graduate student service appointments is given in University Memorandum No. 26, a copy of which is available from the Graduate Program Adviser

or the Office of the Dean of the Graduate School. Some information regarding these arrangements will now be given.

Appointments are granted only to graduate students of high intellectual competence and attainment whose educational goals are clearly defined. An appointment is made only when it is reasonably certain that it will help the student toward the attainment of his goal. Succeeding appointments may be made if the student's progress toward the degree is satisfactory. Maintenance of high scholarship will also be a condition of reappointment.

Graduate appointments are granted to graduate students only. An initial appointment may be offered to a student before he has been admitted formally to the Graduate School but such an appointment is contingent upon the student's admission to graduate status prior to the beginning of his tenure under the appointment.

The tabulation appearing below sets forth a three-level appointment structure providing for specific correlation between the student's eligibility for the higher appointment categories and his or her progress toward an advanced degree. This structure also provides for a range of stipends for students at various levels of merit and achievement. A graduate student's classification, depending on his or her stage of progress at the University, is defined in the footnotes following the table.

1971-72 GRADUATE STUDENT SERVICE APPOINTMENTS

(Students holding these appointments pay resident tuition and fees.)

Title of Appointment	*Stipend for Half-time Service (20 hours per week)		
	One Month	Academic Year	
Teaching Assistant	\$380	\$3,420	Premaster* or Intermediate* or Candidate*
Research Assistant	\$345	\$3,105	
Graduate Staff Assistant	\$345	\$3,105	
Predoctoral Teaching Associate I	\$410	\$3,690	Intermediate or Candidate
Predoctoral Research Associate I	\$370	\$3,330	
Predoctoral Staff Associate I	\$370	\$3,330	
Predoctoral Teaching Associate II	\$440	\$3,960	Candidate
Predoctoral Research Associate II	\$400	\$3,600	
Predoctoral Staff Associate II	\$400	\$3,600	

*Premaster indicates admission to the Graduate School but not completion of the master's degree or the equivalent. Intermediate indicates completion of the master's degree or the equivalent but not designation as a Candidate. Candidate indicates successful completion of the General Examination and designation as a Candidate for the doctor's degree but not completion of the doctor's degree.

Graduate students appointed to the beginning level of graduate teaching appointments will not be permitted

to be in overall charge of a course but will be given an appropriate degree of responsibility and supervision of laboratory or classroom work so that they may be introduced to teaching activities gradually and effectively. Student appointees may also serve as assistants in research activities for which a faculty member is responsible.

Two special categories for teaching appointments are provided above the predoctoral associate level: Predoctoral instructor, for the graduate student who has achieved Candidate status and is ready for increased teaching responsibility, and predoctoral lecturer, for a mature and competent graduate student who, though he need not be a Candidate, has had exceptional previous teaching or other professional experience. For the 1971-72 academic year these appointments carry a minimum stipend of \$440 per month (half time) and with no designated maximum so that the stipend may be adjusted to a level appropriate to the appointee's experience and his teaching responsibilities.

An additional series of appointments titled Graduate Staff Assistant and Predoctoral Staff Associates I and II, is provided for University service activities which are not appropriately described as teaching or research but which are closely related to the student's field of advanced study. Appointments of specific graduate students to these positions may not be made until after the position itself has been specifically approved.

Students holding any of the above appointments are required to render twenty hours of service per week to the University. The appointments may be on a nine-month basis and ordinarily cover the period running from September 16 through June 15. Some of these appointments may be extended to 11 or 12 months. Graduate student appointments do not provide for paid vacations or sick leave. Students who accept these University service appointments normally confine their employment to such appointments.

Spouses of graduate students holding assistantship or associateship appointments as herein described and which require at least twenty hours service, are permitted to register in day classes at resident tuition rates.

A graduate student service appointee must register for and carry throughout each quarter a minimum of 9 credits in formal courses or in research, thesis, or dissertation work. These credits must be in courses which are applicable toward an advanced degree.

Under highly exceptional circumstances and with the prior approval of the Dean of the Graduate School, the above graduate appointments may be made on a hourly

basis. Other hourly appointments for graduate students not employed on any of the above appointments are also available to assist faculty members in teaching and research. Readers are so classified, as are students who give routine assistance in research.

Employment Opportunities

There are other job opportunities on the campus for graduate students. Students may apply directly to the chairman of the department in which they hope to work or to the Student Employment Office. Students seeking part-time employment must be enrolled and on campus before they may secure jobs.

Advisory positions in University residence halls paying room and board plus a monthly stipend are available for single graduate students, both men and women. For further information write the Director of Residence Halls Programs, 333 Student Union Building.

The University offers a number of full-time and part-time employment opportunities in the secretarial, clerical, and technical fields for wives or husbands of married students. These positions offer pay comparable to the prevailing salaries in the community and carry fringe benefits such as vacations, sick leave, and opportunities to enroll in University courses. In addition, nonresident graduate students may receive waiver of the nonresident portion of fees if their spouses are full-time employees of the University. Inquiries may be directed to the Staff Personnel Office, 4014 University Way NE, Seattle, Washington 98195.

Loans

Long-term loans are available to graduate students through the National Defense Student Loan Program and the Federally Insured Loan Program. The National Defense Student Loan Program provides a maximum annual amount to graduate students of \$2,500. Applications for this long term low-interest loan may be obtained from the Office of Student Financial Aid, 170 Schmitz Hall. The deadline is July 1. The Federally Insured Loan Program is a loan program where the student negotiates a loan through his bank and the loan is guaranteed by the federal government. This long-term loan bears an interest rate of 7 percent and has a maximum borrowing amount of \$1,500 per year. Applications may be obtained either at the student's bank or the Student Financial Aid Office. There is no deadline for application; however, it usually takes five to six weeks to process the loan.

Emergency assistance is offered through the Student Emergency Loan Funds available through the Office of Student Financial Aid. Students must be in school to borrow and the maximum amount is that of resident



tuition for one quarter. The maximum length of time a student may borrow on this loan fund is three months.

Financial Aid for Minority Graduate Students

A number of fellowship and assistantship awards ranging up to \$3,000 are open to men and women who are seniors or graduates of accredited colleges and universities in the United States and whose dominant ethnic origin is either American Indian, Asian American, Black American, or Mexican American. In order to obtain one of the fellowship or assistantship awards, the student should contact a specific department of his choice and request to be nominated for one of the Recruitment of Minority Graduate Student Fellowships. Each application must be accompanied by a letter of support from the department chairman or the Graduate Program Adviser.

Direct financial assistance from individual departments also may be available and the prospective student is advised to apply directly to the chairman of the department in which he or she intends to do graduate work.

A limited number of tuition scholarships are available for minority resident graduate students or a student may apply for a NDEA Loan of up to \$2,500 per year. For further information, interested students should contact the Office for Recruitment of Minority Graduate Students, The Graduate School Office, University of Washington, Seattle, Washington 98195.

All awards are contingent upon the student's admission to the University of Washington Graduate School.

UNIVERSITY RESEARCH

Research is of particular concern to the Graduate School since the advanced instruction of graduate students is largely guidance in research and since the continuing effectiveness of professors in instruction of graduate students rests largely upon continuation of the scholarly research activities of these professors.

Statement on University Research Policy

The University of Washington is committed to a large and varied program of research. In common with all other institutions of higher learning, it recognizes that its mission of service to society in the modern age will not be fulfilled unless its programs of teaching and research at all levels are fully integrated and vigorously executed. It believes that it is only through combined teaching and research that society maintains effective contact with the frontier of knowledge, adds new knowledge from time to time to that which we already have, and trains new students in the continuation of these

processes. Thus, we find in research the common ingredient essential to the advancement of knowledge, the enrichment of teaching, and the rendering of services to the community.

The principle of indivisibility of teaching and research has been clearly enunciated on many occasions and in both scholarly and political documents. As an example of the latter, we have the statement in the report of the President's Science Advisory Committee of 1960¹ to the effect that research and the graduate education of young scientists are intimately related. On page 11 of that report one finds the specific conclusion "Basic research and graduate education, . . . are the very essence of the fundamental purposes of the American University." In a similar vein the recent report of the National Academy of Sciences Committee on Science and Public Policy² characterizes the central purpose of American universities by the statement that this purpose is "the advanced education of American youth integrated with the scholarly activities of teachers; in the natural sciences these activities take primarily the form of scientific research."

It is the aim of the University to adhere closely to these principles, thus executing programs of research and teaching in a large variety of fields of learning in the sciences, humanities, social studies, and engineering. Since it is not possible in any one institution to emphasize all of the vast field of learning uniformly, the emphases on the different fields of learning must vary considerably, as is the case also in all other institutions of higher learning. Complete coverage is not a practical, nor would it perhaps be a desirable, objective. On the national scale there is confidence that such coverage is achieved. On the regional scale the University's aim is, and should be, the vigorous development of those areas of learning in which the University has special competence. These areas of special competence are the areas for which it has been most fully prepared by its history of development as a university. It is believed that these are also the areas best suited to its particular geography and the special interests, as well as the needs and potentials of the state of Washington.

Intra-University Scholarly and Research Support

The Graduate School Research Fund provides modest funds available through the University to aid in the support of research activities of the faculty and grad-

¹ *Scientific Progress, the Universities and the Federal Government*, Statement by the President's Science Advisory Committee, November 15, 1960, U.S. Government Printing Office, Washington, D.C.

² *Federal Support of Basic Research in Institutions of Higher Learning*, NAS Study, March, 1964, Printing and Publishing Office, National Academy of Sciences, Washington, D.C.

uate students. These monies are allocated by the Dean of the Graduate School with the advice of the Graduate School Research Fund Committee, appointed by the Dean, which reviews proposals for research support, formulates regulations concerning personnel and use of funds, and stimulates interest in investigative activities. The Committee is concerned with allocations of the Initiative 171 monies, which help to support research in medicine and biology, and of the other funds of the Graduate School.

The Agnes H. Anderson Research Fund for the support of research was formed from the proceeds of a very generous gift donated by two anonymous friends of the University. Accepted by the Board of Regents in 1943, the fund is named in memory of the donor of Alfred H. Anderson Hall and the *Agnes Healy Anderson Forestry Trust Fund*. The selection of research projects and allocation of funds for their support is the responsibility of the Dean of the Graduate School after consultation with the Graduate School Research Fund Committee.

The Graduate School Consultants Fund provides modest funds to assist in bringing distinguished scholars and scientists in the vicinity to the University for a day or for short periods for consultations and seminar discussions to assist members of the faculty and graduate students in carrying forward their research. For information relating to the Consultants Fund, communications may be addressed to the Dean of the Graduate School.

Gift, Grant, and Contract Research Funds may provide assistance to University faculty, graduate students, and staff in carrying out significant research and other activities. Research requiring substantial amounts of faculty, graduate student or other staff time, or significant use of University facilities may be undertaken by the University under arrangements specified in a gift, grant, or contract agreement between the research sponsor and the University.

Grants are often made by foundations, industries, and other agencies for basic research in designated fields without explicit definition of projects or goals. Grants of this kind contribute in an especially important way to the advancement of knowledge through basic research.

Special Lectureships and Professorships

The Walker-Ames Fund was founded in 1931 by Maud Walker Ames and her husband, Edwin Gardner Ames. Its purpose was to enable the University of Washington "to guarantee to the state of Washington the scholarly and educational services of the most distinguished minds available in this and other countries..." Since the first Walker-Ames visiting professor was appointed

in 1936, well over one hundred notable scholars have come to the University as temporary members of the faculty and have enriched the intellectual life of the University community.

The John Danz Fund was established in 1961 by a gift to the University from the late Mr. John Danz and Mrs. John Danz. The funds, in part, are used to bring to the University one or more distinguished scholars "of national and international reputation who have concerned themselves with the impact of science and philosophy on man's perception of the rational universe." The first John Danz Lecturer was Sir Julian Huxley who came to the University from London during Spring Quarter, 1962.

Communications relating to the Walker-Ames Fund and the John Danz Fund should be addressed to: University of Washington, The Dean of the Graduate School, Seattle, Washington 98195.

RESEARCH AND SPECIAL FACILITIES

Some academic or research activities and facilities are of general significance in all or many fields of knowledge throughout the University. A listing of these is set out below with some of them described in greater detail.

Accelerators and Nuclear Reactor

Albert L. Babb, Ph.D., *Director*
Gene L. Woodruff, Ph.D. *Associate Director*
Nuclear Reactor Building

Research in nuclear engineering, and allied fields.

Alcoholism Research Group

Ann Woodson, M.A., *Alcoholism Research Coordinator*
Room 213, Health Sciences Annex 3

This group is constituted for the purposes of exchanging ideas and discussing research on problems relating to alcohol. It will coordinate closely with the Alcoholism Research Council. The funding of graduate or medical or law student research conducted off-campus will be one of its functions.

The Arboretum

Brian O. Mulligan, *Director*
Joseph A. Witt, *Assistant Director*

The Arboretum maintains propagation of plants from all over the world.



Botanical and Drug Plant Gardens

L. R. Brady, Ph.D., *Director*
Gerard C. Vreeburg, M.S., *Supervisor*
Drug Plant Laboratories

These two areas cover three acres of experimental and growing gardens.

Institute of Governmental Research

Robert H. Pealy, Ph.D., *Director*
Walter Williams, Ph.D., *Director of Research*
3935 University Way NE

The Institute of Governmental Research is an interdisciplinary University-wide institute responsible for research on a wide range of governmental policy problems with particular emphasis on urban affairs. Faculty members and graduate students from all parts of the University campus participate in its programs. The research policies of the Institute are developed by a faculty advisory committee representing a full range of University disciplines and professional schools and by a public advisory committee from appropriate governmental organizations.

Center for Asian Arts

Millard B. Rogers, Ph.D., *Director*
Richard McKinnon, Ph.D., *Associate Director*
131 Art

The Center promotes the study and performance of Asian music, art, and drama.

Center for Research in Oral Biology

Leo M. Sreebny, D.D.S., Ph.D., *Director*
Dan G. Middaugh, D.D.S., *Assistant Director*
B122 Health Sciences Building

The central goal of the Center is to assist in the national effort to reduce the toll of oral disease and to promote the general level of oral health.

Center for Studies in Demography and Ecology

S. Frank Miyamoto, Ph.D., *Director*

This office conducts basic research on population and ecological problems, primarily in the Pacific Northwest, and serves as a training center for graduate students in the social sciences.

Center for Education in Politics

Alex Gottfried, Ph.D., *Director*
Engineering Annex

Workshops, seminars, and various other political education programs for faculty and students are sponsored by the Center.

Developmental Psychology Laboratory

Halbert B. Robinson, Ph.D., *Director*
208 Developmental Psychology Laboratory

Graduate training in child clinical psychology is provided by this Laboratory.

Fisheries Research Institute

Robert L. Burgner, Ph.D., *Director*
260 Fisheries Center

Coordinates major research in fisheries biology, both on campus and on the seas and in Alaska.

Henry Art Gallery

Spencer Moseley, M.F.A., *Acting Director*
LaMar Harrington, *Assistant Director*

Exhibits of painting, sculpture, print making, photography, and craft media are supplemented by film exchanges, musicales, and other special events in the Henry Gallery.

Institute of Forest Products

David P. Thomas, M.F., *Director*
123 Anderson

The Institute encourages multi-discipline approach to forestry and wood research.

Institute for Sociological Research

David R. Schmitt, Ph.D., *Director*
119 Guthrie

Besides supporting research activities of the faculty in sociology, the Institute trains students in field investigations and other phases of research.

Laboratory of Radiation Ecology

Allyn H. Seymour, Ph.D., *Director*
104 Fisheries Center

This research unit is supported by the U.S. Atomic Energy Commission which conducts long-term investigations on effects of radiation.

Oceanographic Research Vessels

Maurice Rattray, Ph.D., *Chairman*
123 Oceanographic Teaching Building

These vessels are used for field studies in Puget Sound and the Pacific Ocean.

Organization for Tropical Studies

Marion E. Marts, Ph.D., *University Representative*
208 Anderson

The University of Washington is a member of this consortium of 25 leading United States and Latin American

educational and research institutions. Opportunities are offered for graduate education and student and faculty field research in the Central American tropics.

Pacific Northwest Bibliographic Center

Laura G. Currier, B.A., B.L.S., *Director*
253 Library

This Center acts as a cooperative agency for maintaining a union catalog of books in libraries of Pacific Northwest colleges.

Quaternary Research Center

A. L. Washburn, Ph.D., *Director*
S. C. Porter, Ph.D., *Associate Director*
42 Johnson Hall

Quaternary research focuses on the processes presently shaping the environment and those that have operated on it for the past several million years. Man is now more aware than ever that his surroundings are the result of environmental history and that the key to his future may lie in the perspective provided by interdisciplinary studies of this history and of contemporary events as they have been influenced by it. This commitment to linking the past, present, and future through interdisciplinary study and research is making the University of Washington a major center for such work.

The structure of the Quaternary Research Center permits faculty and students to cooperate effectively across departmental boundaries and thus strengthens interdisciplinary aspects of any particular Quaternary study. The organization does not presently offer degrees, although it functions in an advisory and supervisory capacity for some interdisciplinary projects. There are over seventy cooperating faculty representing anthropology, atmospheric sciences, botany, chemistry, civil engineering, forest resources, geography, geological sciences, geophysics, oceanography, and zoology. As a result there is a broad spectrum of interdisciplinary study possibilities.

A new Quaternary Research Geophysics Building to be ready in 1972 will include laboratories for palynology, potassium-argon dating, radiocarbon-dating research, oxygen-isotope research, and periglacial studies, in addition to various geophysical laboratories. The Building will also house a scanning electron microscope and X-ray diffractometer for the Quaternary Program and will contain the administrative headquarters of the Center, including a combination seminar room and reference library.

Students interested in graduate programs relating to Quaternary studies should apply to the director of graduate studies in the department of their choice.

Radio Station KUOW and KCTS-TV Station

Kenneth Kager, *Manager*, KUOW
325 Communications

John L. Boor, *Acting Manager*, KCTS-TV
154 Drama-TV

Besides providing a public service, these stations train students in communications.

Speech and Hearing Clinic

Phillip A. Yantis, Ph.D., *Director*
1320 N.E. Campus Parkway

The Clinic serves as a teaching and research center for the training of students in speech science, speech and language pathology, and audiology.

Thomas Burke Memorial Washington State Museum

George I. Quimby, M.A., *Director*
201 Museum

The museum is an educational and cultural center serving the needs of the University of Washington and all Pacific Northwest schools.

University Hospital

R. S. Rambeck, *Director of Hospitals*
David Jeppson, *Hospital Administrator*
BB361 University Hospital

This 320-bed hospital contains a Rehabilitation Center, large outpatient clinics, a center for care of premature infants, a psychiatric department, and an emergency unit. It also serves as a teaching center for physicians, nurses, and fourteen allied health professions.

Wind Tunnel

William H. Rae, Jr., M.S. in A.A., *Director*
206 Guggenheim Hall

This is a research center for aeronautics and astronautics. It provides a practical industrial experience and a public service to industry.

Joint Center for Graduate Study

R. Wells Moulton, Ph.D., *Dean*
Richland, Washington
University office: 1 Administration Building (AD-30)

The Joint Center for Graduate Study, located at Richland, Washington, is an off-campus facility operated by the University of Washington, Washington State University, and Oregon State University. The facility is available for graduate study and research to students associated with these universities, as well as other



colleges and universities in the Pacific Northwest and elsewhere. Course work completed through the Joint Center and research performed in laboratories of contractors to the Atomic Energy Commission, upon approval in advance, may be applied toward the fulfillment of the requirements for certain advanced degrees offered by the University of Washington.

Currently, graduate-level and upper-division courses are available in business administration, chemistry, librarianship, mathematics, physics, radiology, and in chemical, electrical, mechanical, metallurgical, and nuclear engineering. Atomic Energy Commission-owned laboratory facilities, operated by various prime contractors to the AEC, are available for research purposes on an individual basis and provide an exceptional opportunity to do research work requiring facilities not available at most colleges and universities. A limited amount of financial support is available through the Richland Graduate Fellowship program for students of advanced standing in support of M.S. thesis or doctoral dissertation research to be performed at Richland. A limited amount of financial support is also available for faculty members desiring to do research at the Center.

Most of the students and faculty of the Center are employees of the Atomic Energy Commission or its contractors and have access to their laboratories. Classes at the Center are usually held in the evening or late afternoon. Employment with contractors to the AEC is generally available only to citizens of the United States.

All requests for information concerning the activities and the programs of study and research at the Center, availability of facilities, admission to activities, and for copies of the *Joint Center for Graduate Study Bulletin*, containing general information and course offerings, should be addressed to: Joint Center for Graduate Study, 100 Sprout Road, Richland, Washington 99352.

Child Development and Mental Retardation Center

Charles R. Strother, Ph.D., *Director*

Robert W. Deisher, M.D., *Associate Director*

CD405 Child Development and Mental Retardation Center

The Child Development and Mental Retardation Center provides facilities for teaching and research programs relating to mental retardation and child development. The Center consists of four units: a medical research unit, a behavioral research unit, a clinical training unit, and an experimental education unit. The

facilities include biological, medical, and behavioral research laboratories; a large multidisciplinary diagnostic clinic; a short-term residential building equipped to house families during diagnostic evaluation or while participating in family research projects; and an experimental school containing twelve classrooms.

Laboratories and other facilities are staffed by the various participating departments, schools, and colleges of the University. The programs and activities of the Center are coordinated by an executive committee. Research and training programs of the Center are closely related to the programs of the State Departments of Public Instruction, Health, Institutions, and Public Assistance.

Requests for information concerning specific research and training programs should be addressed to the appropriate academic department. Requests for information concerning the Center should be addressed to the Director, CD405 Child Development and Mental Retardation Center, University of Washington, Seattle, Washington 98195.

Friday Harbor Laboratories

Robert L. Fernald, Ph.D., *Director*

Eugene N. Kozloff, Ph.D., *Resident Associate Director*

Friday Harbor, Washington

University office: 208 Kincaid NJ-15

The Friday Harbor Laboratories, a component of the Division of Marine Resources, comprise the principal marine science station of the University of Washington. The staff includes professors from various departments of the University including Botany, Fisheries, Oceanography, and Zoology, as well as visiting professors from other institutions.

The Friday Harbor Laboratories are located approximately eighty miles north of Seattle near the town of Friday Harbor on San Juan Island, on a biological preserve of 484 acres of wooded land with about two miles of shore line. The island is one of the largest of the 172 that make up the San Juan Archipelago located in the northwest section of the state of Washington between Vancouver Island and the United States mainland.

The Laboratories are close to sea waters varying from oceanic to those highly diluted by streams, with depths to 1,000 feet, bottoms varying from mud to rock, and water movements ranging from those of quiet bays and lagoons to those of swift tideways. The waters about the San Juan Archipelago abound in varied marine flora and fauna.

During spring and summer, the Laboratories offer an opportunity for independent and supervised research, as well as a varied program of instruction primarily oriented to graduate students (exceptional, advanced undergraduates are occasionally admitted). Throughout the year, use of the facilities of the Laboratories for research in various areas of marine science is encouraged.

Requests for information on the summer program and for general information concerning study and research, availability of facilities, and admission to the Laboratories should be addressed to the Director, Friday Harbor Laboratories, 208 Kincaid NJ-15, University of Washington, Seattle, Washington, 98195.

Office of Scholarly Journals

Emily Johnson, B.A., *Director*
Parrington Annex 7

The University maintains an Office of Scholarly Journals in association with the Graduate School. The function of the Office is to provide assistance to members of the University faculty who have editorial responsibilities in relation to the publication of the many scholarly journals now associated with the University of Washington.

Requests for information concerning the activities and facilities of the Office should be addressed to the Director, Office of Scholarly Journals, University of Washington, Seattle, Washington 98195.

Computer Center

Robert G. Gillespie, B.A., *Director*
Computer Center SC-10
Charles W. Dickens, *Assistant Director*
Scott A. Eyler, *Assistant Director*
Monique Rona, *Assistant Director*

The Computer Center, established in 1956, provides computer services for the University of Washington and the community for education, research, and administrative uses. The principal computers now installed include a Burroughs 5500 and a Control Data Corporation-6400. Also available are key-punch/EAM, auxiliary card-handling equipment with service provided for self-service use; graphics equipment, including mechanical plotting equipment allowing automatic plotting of information and a digital recording system capable of reading coordinates from maps, graphs, film, etc., and recording them on magnetic tape; and terminals which make possible text editing and remote job entry from teletypes directly connected to the B5500 and the CDC 6400.

The Center offers specialized training through non-credit classes in programming languages and operating systems needed to use the computer systems in the Computer Center. Other services available are consultation; an information center that includes reference materials, computer manuals, and special program libraries; and professional programming.

Cost accounting and reporting is provided to the users for all computer services. The staff of the Center, in liaison with campus users, plans for special hardware and software requirements and develops general purpose computer programs satisfying major user requirements.

The Center is administered through the Office of the Vice President for Research.

Requests for the *Computer Center Newsletter* or for information concerning the facilities should be addressed to the Director, Computer Center, University of Washington, Seattle, Washington, 98195.

Computer Science Laboratory

Hellmut Golde, Ph.D., *Director*
43 Roberts Hall

The Computer Science Laboratory (CSL) is the research and teaching laboratory for the Computer Science Group. It is used for studies of operating systems and other computing project studies which, if done on Computer Center equipment, might impede the job flow; and for studies which require specialized equipment (e.g. graphics terminals) which are not supported by the Computer Center.

The operation of the Computer Science Laboratory is integrated with the graduate training program of the Computer Science Group in order to provide practical experience for those Computer Science students interested in the engineering and applied aspects of computer science. A large amount of time is reserved for open-shop operation for experimental studies.

The Laboratory contains a Xerox Data Systems Sigma 5 Computer with a disc-oriented operating system. A second component is the remote terminal system for interactive computing. The Laboratory also has facilities for computer graphics studies.

Division of Marine Resources

Stanley R. Murphy, Ph.D., *Director*
John Dermody, B.S., *Assistant Director for Operations*
3716 Brooklyn N.E., Apt. 3

The Division of Marine Resources promotes the University's interest in the exploration, development, and



the use of the resources of the seas and oceans. It coordinates and supplements the teaching, research, development, and advisory service programs in marine science and engineering and cooperates in similar activities with outside agencies and institutions. Interdisciplinary in nature, the Division is concerned with the development and the use of the physical, chemical, geological, and biological resources of the marine environment; marine commerce and engineering; and the economic, legal, biomedical, and sociological problems arising out of the management and utilization of marine resources.

The Division is responsible for the administration of the Friday Harbor Laboratories, and for the coordination and administration of the interdisciplinary Sea Grant Institutional Program. It also administers the interinstitutional Arctic Ice Dynamics Joint Experiment, and the interdisciplinary Advanced Arctic Technology Program. DMR cooperates with agencies of state and federal government which are concerned with marine matters.

Requests for information should be addressed to the Director, Division of Marine Resources, 3716 Brooklyn NE, Apt. 3, University of Washington, Seattle, Washington 98195.

Regional Primate Research Center

Orville A. Smith, Jr., Ph.D., *Director*
I-421 Health Sciences Building

The Regional Primate Research Center, located in a wing of the Health Sciences Building, was established by the National Institutes of Health in 1961. Its activities are University-wide, regional and national, with the University of Washington serving as the "host" institution.

The purpose of the Center is to conduct biomedical and psychological research on nonhuman primates. At the Center, one of seven throughout the nation, the emphasis is on cardiovascular, neurophysiological, behavioral, and dental research. The Center maintains a large breeding facility near Spokane.

The Center develops and uses advanced instrumentation (transducers, telemetry) and high-speed on-line data acquisition systems.

A worldwide bibliographic and information service is also maintained, based on analysis of primate research literature. It circulates a weekly list of current primate literature, prepares retrospective bibliographies on request, and compiles normative data.

Staff at the Center includes research faculty from many different disciplines within the University as well as visiting scientists. The Center provides research training to graduate students and to postdoctoral fellows.

Requests for information should be addressed to the Director, Regional Primate Research Center, I-421 Health Sciences Building, University of Washington, Seattle, Washington 98195.

University of Washington Press

Donald R. Ellegood, M.A., *Director*
University of Washington Press Building
1416 N.E. 41st

The University of Washington Press is the book publishing division of the University. Like many of the older scholarly presses, it grew out of the tradition of University publishing and printing. The Press imprint dates from 1909 when the University acquired typesetting equipment and a printing press for the campus newspaper. In 1911 the Press began to issue the *Washington Historical Quarterly*, now called *Pacific Northwest Quarterly*, and between 1915 and 1920 several monograph series were inaugurated. The first full-length book to bear the Press imprint appeared in 1920. In 1950 the Press was separated from the Printing Department and established as the book publishing division of the University.

The Press backlist now includes about five hundred fifty titles in print, with special emphasis on art, anthropology, Asian studies, biology, ethnology, history and government, language and literature, oceanography, and regional subjects. The Press publishes about fifty new books each year, both by members of the University faculty and by scholars outside the University. The Press has a paperback reprint series called Washington Paperbacks; a continuing clothbound reprint program, including the Americana Library series, to make available again standard out-of-print works of scholarship; and an import program, the purpose of which is to make known to American scholarship important books in English published abroad. The Press is also publisher of the American Ethnological Society Monographs, which now number over fifty volumes. The Press also publishes a variety of audio-visual educational materials, most of which grew out of original research on campus. These materials include film strips, disc recordings, and language tapes. All books published by the Press are now also available in microfiche form.

The Press staff manages all details of editing, design, and marketing of its books, and buys its printing and binding on a contract basis. The Press has sales repre-

sentatives throughout the United States and maintains its own sales office and warehouse in Great Britain. It is also represented by an international distribution network covering Latin America, Africa, the Middle East, and Southeast Asia. The Press is a member of the Association of American University Presses and the Association of American Publishers, and is active in a variety of international scholarly book publishing activities.

Editorial control of the imprint of the Press is vested in the Committee on the University Press, of which the Dean of the Graduate School is Chairman. The Committee formulates policy, reviews manuscripts, authorizes the use of the Press imprint, and promotes the interests of the Press.

The Press invites members of the faculty to bring to it manuscripts and publishing proposals at an early stage in their development, and welcomes suggestions of books to reprint in either cloth or paperback. The Press also urges that, whenever possible, grants for research likely to result in publication in book form also include funds specifically earmarked for publication. The Director and his staff will be glad to advise members of the faculty concerning estimated publication costs at the time a research grant application is being prepared.

All inquiries and requests for information should be addressed to the Director, University of Washington Press Building, 1416 NE 41st, Seattle, Washington 98195.



CONTINUING EDUCATION

**Dean
Lloyd W. Schram**

Because learning is a lifelong activity rather than a terminal process, the University of Washington carries on a sustained continuing education program for adults. This program has three primary and interrelated objectives: (1) to encourage the personal development and self-realization of the individual; (2) to assist him in becoming a more effective citizen; and (3) to strengthen the economic, cultural, and political aspects of society through direct communication with the research and scholarship of the University world. Because the University seeks to be responsive to community needs for continuing higher education, it is concerned not only with already established programs, but also with projects of an innovative nature. Hence, it is continuously expanding and changing to accommodate these needs.

There are five divisions that comprise Continuing Education at the University: the Division of Evening Classes, the Division of Independent Study, the Division of Extension Services, the Division of Continuing Studies, and the Division of Community Development. All of the divisions work closely with the various academic departments. Programs include both credit and noncredit classes and other educational services of direct interest to undergraduates, as well as to graduates and other adults.

In 1966 the University of Washington Senate approved the establishment of a new category of courses that carry continuing studies credit. These courses are designed to supplement and update the knowledge of individuals already possessing baccalaureate degrees, particularly those engaged in the various professions. Such courses, while not considered a part of any regular undergraduate or graduate degree curriculum, require a level of student participation and achievement similar to that expected for courses in degree programs. Participants successfully completing continuing studies courses receive a Certificate of Course Completion, as well as a predetermined number of hours of continuing studies credit that is recorded on official University transcripts. Courses in continuing studies are initiated by a sponsoring department, school, or college, in cooperation with the Office of the Dean of Continuing Education, and must meet the standards for review and approval required for regular academic courses.

Division of Evening Classes

A variety of regular University courses are offered for credit by the Division of Evening Classes, and are open to all regularly admitted students. Students may be admitted into either matriculated or nonmatriculated status. Matriculated students are those with degree objectives who satisfy the University's entrance require-

ments. Nonmatriculated students are those not having a degree or certificate objective.

Although the evening program is primarily intended for persons unable to attend during the day, evening sections are also available to day students who wish to supplement their schedules. Under a single tuition schedule, a student may elect to register for courses offered at any hour from 7:30 a.m. to 8:00 p.m. Enrollment for all credit courses requires an application for admission accompanied by appropriate transcripts.

Postbaccalaureate students may enroll with nonmatriculated standing, as unclassified students, or as graduate students upon admission to the Graduate School, if an advanced degree is the objective.

For further information, please consult the University of Washington Evening Classes Administrative Office, 222 Lewis Hall, Seattle, Washington 98195.

Division of Independent Study

Director

Richard F. Wilkie
203 Lewis Hall

This program is designed to meet the needs of those individuals who wish to take college-level courses but find it difficult or impossible to attend formal day or evening classes. Anyone over eighteen who is not attending high school or anyone under eighteen who is a high school graduate is eligible. Certain qualified high school students may also be permitted to enroll upon recommendation of their high school counselors or principals and the approval of the University. In many instances, Independent Study is useful to the undergraduate who may wish to pursue a part of his course of study by this method.

Since a student may enroll in a course at any time of the year and proceed as rapidly or as slowly as he wishes, Independent Study offers the individual an opportunity to educate himself at his convenience. Most courses are prepared by regular members of the faculty and carry extension credit which may be applied toward a bachelor's degree or teaching certificate. Each course offered for credit parallels the similarly numbered course taught in the residence program. Certain noncredit courses required for University entrance are available to adults wishing to qualify for admission.

Annually, over three thousand students enroll in the Independent Study program. Courses currently are offered in 24 academic fields, ranging from business and education to oceanography, mathematics, and foreign languages.

A bulletin describing courses and enrollment procedures may be obtained from the University of Washington, Director of Independent Study, 203 Lewis Hall, Seattle, Washington 98195.

Division of Extension Services

Director

Jerry L. Kelley
322 Lewis Hall

This Division encompasses a great variety of educational opportunities, with programs available to undergraduates, graduate and professional students, and the community at large. Many of the activities are conducted on a state-wide basis.

Lectures and Concerts

Musical events and lectures are made available to both students and the general public through this office. Noted instrumental groups, operas, foreign language dramatic productions, and both student and faculty presentations are included in the program, and offer many opportunities for enrichment of the student's cultural background.

Radio Broadcast Services and KUOW

Radio KUOW-FM broadcasts programs of an educational, cultural, or scientific nature and communicates information concerning University affairs to students, alumni, and the general public. The station also supplies students in the School of Communications with actual experience for careers in radio. In addition, there is opportunity for experimental programs designed to test and develop new broadcasting techniques, sometimes in combination with other media. Effective radiated power of 86 kw carries the signal to most of Western Washington on a frequency of 94.9 MHz.

Short Courses and Conferences

The staff of this Department works cooperatively with University faculty to explore the feasibility of and to assist in the planning, development, staffing, promotion, conduct, and evaluation of educationally effective conferences and short courses of an appropriate level and content. Some programs are especially designed to help keep people up to date in their fields, while others are for those who wish to acquire knowledge in a field new to them.

The office also operates the University of Washington Continuing Education Center at Lake Wilderness.

Statewide Arts

At the request of communities within the state, the Statewide Arts consultant works with the Office of Lectures and Concerts, the Division of Community Devel-



opment, and the four fine arts departments of the University in setting up seminars and workshops dealing with the cultural arts and arranging for faculty and performing arts appearances. This service to the communities of the state was added to Extension Services in May of 1966 and the office is now becoming a central resource center, often serving in an advisory or coordinating capacity, utilizing talent from different institutions and the communities themselves.

Telecourses

Telecourses provide an opportunity for everyone with access to a television set to obtain college-level instruction for information and enrichment. Embracing a wide range of topics, a number of televised lecture series are prepared each quarter by members of the University faculty and are presented on the educational station, KCTS-TV, and on commercial stations in Seattle. Kinescope or videotape recordings are also released to stations throughout Washington as well as to stations in other parts of the country. Study guides prepared by the instructor may be purchased.

Civil Defense Training Program

This office conducts exercises for public officials, business, industry, and other civic leaders in order to furnish them with Civil Defense information. It also trains instructors to teach local emergency skills courses. Programs are conducted throughout the state and are geared to the individual needs of the communities.

Information about any of the preceding activities may be obtained from the University of Washington, Director of Extension Services, 322 Lewis Hall, Seattle, Washington 98195.

Division of Continuing Studies

Director

Franklyn L. Hruza
212 Lewis Hall

Through its programs the division extends the manifold resources of the University to the community and state. Each lecture-discussion series, seminar, noncredit and extension credit course is planned to serve the continuing education interests and needs of adults with varied educational backgrounds. Most programs are held on campus but an increasing number are being moved into the community. Admission to the University is not necessary, therefore, the enrollment limitation does not apply. Generally, there are no prerequisites although students may be asked to evaluate their own backgrounds and skills before registering.

Noncredit Studies

This program, through its lecture-discussion series, presents faculty and guest lecturers speaking on a single

topic or interdisciplinary concern, approaching it from a variety of positions. Members of the audience have ample opportunity to raise questions and exchange ideas with the lecturers.

Rounding out the program are courses, workshops, and seminars presenting university-level material in a non-competitive, informal atmosphere where learning is the central consideration. Some offerings are identical to those in the University's credit program; others are experimental or innovative; and still others survey a specialized field from a broad perspective. Midday seminars are planned for registrants who prefer to attend during daytime hours. They are characteristically informal, often taking place over a lunch period.

Women Studies

This office offers specialized group counseling for women who seek creative change and want professional guidance in making new and difficult decisions. Courses and seminars in the area of educational and vocational choice are scheduled during the academic year.

Residential Seminars

Residential Seminars, a series of informal, weekend programs, bring together University faculty and interested adults for an intensive exchange of ideas on significant social and cultural topics. Utilizing an interdisciplinary approach, the program deals with a broad range of subjects, from traditional liberal arts to subjects having direct relevance to the contemporary social milieu.

Title I, Higher Education Act of 1965

The division serves as the University liaison for Community Service Projects granted funding under this title.

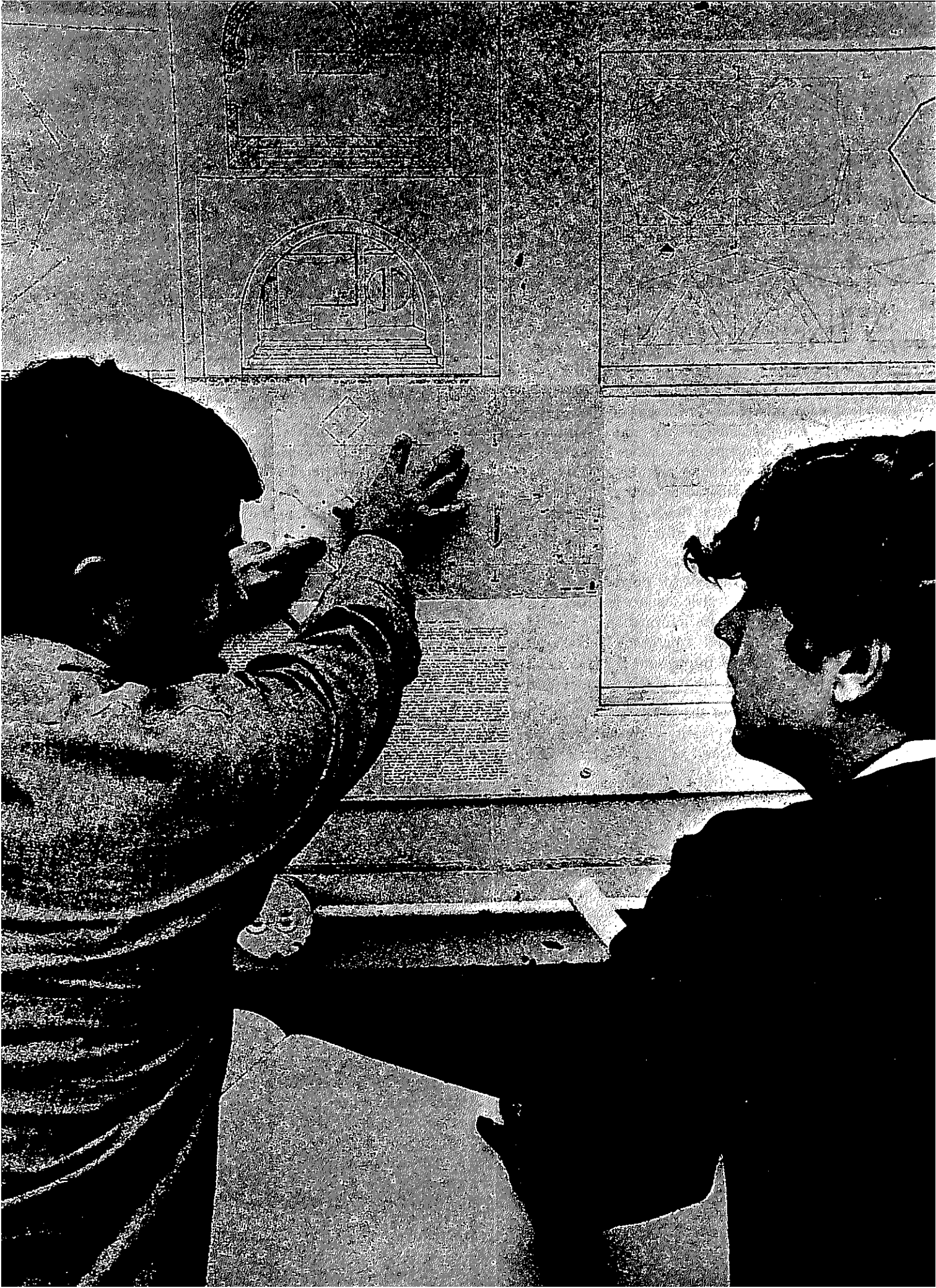
A bulletin giving information and listing programs may be obtained from the University of Washington, Division of Continuing Studies, 212 Lewis Hall, Seattle, Washington 98195.

Division of Community Development

Director

Harold L. Amoss
316 Lewis Hall

The primary purpose of the Division of Community Development is to provide an educational service to state communities in order that they may use citizen resources more fully to solve public problems. It also offers opportunities for enrolled students to work on actual field problems in collaboration with community groups.





ARCHITECTURE AND URBAN PLANNING

Dean

Robert H. Dietz
206 Architecture

Associate Dean

Norman J. Johnston
206 Architecture

Professors

Harold L. Amoss, Thomas L. Bosworth, Robert H. Dietz, Arthur L. Grey, Jr., Arthur P. Hermann (emeritus), Edgar M. Horwood, Phillip L. Jacobson, Alfred Jensen (emeritus), Norman J. Johnston, Charles M. Kelley, Wendell H. Lovett, Marion E. Marts, Omer L. Mithun, Warren R. Seyfried, Victor Steinbrueck, Daniel M. Streissguth, Philip Thiel, Morgan D. Thomas, Myer R. Wolfe

Associate Professors

Robert G. Albrecht, Richard S. Alden, Earl L. Bell, David L. Bonsteel, Robert T. Buchanan, Robert A. Chervenak, Lee G. Copeland, J. William Curtis, Ernst L. Gayden, Richard Haag, John L. Hancock, Grant Hildebrand, George R. Hutchinson, Keith R. Kolb, Thomas J. Norton, Hermann G. Pundt, Alan Rabinowitz, Donald G. Radcliffe, John A. Rohrer, Arnold S. Rosner, Donald K. Sakuma, Jerry B. Schneider, Raymond C. Schneider, Claus Seligmann, R. Duane Shinn, Robert E. Small, John R. Sproule, Gerard R. Torrence, Gordon B. Varey, William C. Wherrette

Assistant Professors

Richard Berteaux, James J. Donnette, James W. Hopkins, Colette C. Jackson, Edgar G. Lebert, Leonard B. Mandelbaum, James Sanders, Robert Sasanoff, William

R. Sims, Jr., W. Jean Skirvin, Christian Staub, David C. Streatfield, Richard Untermann, Douglas R. Zuberbühler

Lecturers

Lee R. Beach, Owen Beenhouwer, L. Franklin Carroll, Richard Congdon, Don A. Denison, Richard L. Eberharter, David K. Ernst, Marvin J. Flaherty, Robert L. Harlan, James W. Hopkins, Franklyn L. Hruza, Charles L. Jansen, Jr., Grant R. Jones, Richard L. Ludwig, Daniel Lyons, Donald H. Miller, Galen F. Minah, Folke E. Nyberg, Barry S. Onouye, Carl L. Timpe, Robin M. Towne, Astra Zarina

Research Associate

Einar H. Hendrickson

Man shapes his physical environment toward beauty and order . . . using the land, buildings, and his urban framework to realize his concept of livable growth. His tools are forms and spaces and technology.

The College of Architecture and Urban Planning deals with the physical context in which we live, particularly the city and its surrounding areas. Within the college are four areas of study: architecture, landscape architecture, urban planning, and building construction.

Architecture is concerned with buildings and groups of buildings, comfortable to live with, satisfying to the eye. Frequently it uses new and unexpected materials, art forms, different structural concepts to achieve simplicity within physical and psychological complexity.

Landscape architecture works with the physical and social implications of man's use and enjoyment of the land, combining the disciplines of architecture, art, and technology with concerns for understanding and protecting the natural environment and its relationship with the people who occupy it.

Urban planning deals with metropolitan problems: population, development, regulatory measures, community facilities, transportation, slum clearance . . . the total urban complex and its enormous needs.

Finally, building construction translates ideas into reality. The designer and the developer become effective through the synchronized and dynamic functioning of the building industry at all levels.

The University grounds, located in the heart of a major urban area, comprise a laboratory for study. The College works closely with both the academic and professional worlds to build the curriculums and faculty best suited to the needs of the student who will one day be responsible for interpreting our environmental needs. The four professional areas of the College are an acknowledgment of the mutual interests of these fields in the creation of an appropriate contemporary environment.

Architecture was originally founded as a department in 1914, and from 1935 to 1957 it was a school in the College of Arts and Sciences. Urban Planning was initiated in 1941, Landscape Architecture in 1960, and Building Construction (then the Department of Building Technology and Administration) in 1963. Architecture and Urban Planning became one of the colleges of the University in July, 1957.

The College's programs in architecture and landscape architecture are both accredited, architecture by the National Architectural Accrediting Board and landscape architecture by the American Society of Landscape Architecture. The College has been a member of the Association of Collegiate Schools of Architecture since 1925. The Department of Urban Planning is a member of the Association of Collegiate Schools of Planning and has been granted recognition by the American Institute of Planners. The Department of Building Construction is a member of the Associated Schools of Construction.

The College offers work leading to the four-year degrees of Bachelor of Arts in Environmental Design, Bachelor of Arts in Urban Planning, and Bachelor of Science in Building Construction. It also offers the five-year professional degree of Bachelor of Landscape Architecture. At the graduate level are the Master of Architecture

and, in Urban Planning, the master and doctoral degrees.

College Facilities and Services

The College of Architecture and Urban Planning occupies two separate buildings on the campus: Architecture Hall is one of the few buildings remaining from the 1909 Alaska-Yukon-Pacific Exposition. Built as a permanent structure, it was used as an art gallery for the Exposition and is now used by the College for classrooms, design laboratories, seminar rooms, and offices for the dean of the College and the faculty.

Gould Hall was built specifically for the College and was officially occupied in 1971. Designed around a great skylighted central court which serves as a dramatic focal space, the building's successive floors contain the principal functions of the College's four departments, with their classrooms, seminar rooms, design and research laboratories, and faculty and departmental offices. In addition there are various specialized facilities, including an extensive shop and photolab. Gould Hall also houses the College's library (a branch of Henry Suzzallo Library) with a collection of materials related to the College's programs. Included are approximately 12,000 volumes, 10,000 pamphlets, 360 current periodicals, and 26,000 35-millimeter slides, as well as a large file of manufacturers' catalogs and brochures.

Honorary and Professional Societies

Iota chapter of *Tau Sigma Delta* was organized at the University of Washington in 1924. An international honorary and professional fraternity in architecture and the allied arts, the organization promotes scholarship and professional excellence. Membership is selective and is based on scholastic achievement.

Sigma Lambda Chi, a local chapter of the national honorary fraternity, was formed in 1966. It gives recognition to outstanding students in building construction as well as furthers relationships between campus and industry and campus and the public.

Student Chapter, *Associated General Contractors of America*, chartered in 1971, seeks to establish a close relationship with the industry as well as provide support for the educational program of students in building construction, all of whom are eligible for membership.

Landscape Student Coalition is the organization that all majors in landscape architecture are invited to join. It seeks to strengthen linkages between students, classrooms, and practice, and to expand awareness of landscape architecture in general on the campus.



Urban Planning Students Association is open to all urban planning students. As a professional society, the Association sponsors lectures and meetings of interest to planners, and presents several social functions during the school year.

Scholarships and Financial Aids

A number of undergraduate departmental scholarships are awarded annually to students who demonstrate outstanding scholastic ability and general excellence. Other awards include medals and certificates acknowledging the achievements of top-ranking students in the College. A number of teaching assistantships are available for graduate students in architecture and in urban planning. There is also a series of fellowships and scholarships awarded to graduate students in urban planning.

Undergraduate Programs

Associate Dean

Norman J. Johnston
206 Architecture Hall

To prepare for normal progress in the College of Architecture and Urban Planning, the student must complete, in high school, three semesters of algebra and two of plane geometry and one of trigonometry. Physics should be selected as the laboratory science. Freehand drawing, humanities, and social sciences are strongly recommended as electives.

A student on entering the University enrolls in one of its several colleges or schools, whether or not he has chosen an academic major at the time of his admittance. If he chooses to major in building construction, he enrolls in the College of Architecture and Urban Planning. If, on the other hand, he wishes to become an architect, landscape architect, or urban planner, he begins his first two years as a premajor in the College of Arts and Sciences and, upon successful completion, applies for admission to the College of Architecture and Urban Planning.

Since admission to the College is competitive, in filling enrollment quotas preference will be given to those applicants who, in the judgment of the University, are best qualified to undertake its programs.

Admission to the Preprofessional Years

Students expecting to major in architecture, landscape architecture, or urban planning, who have completed their premajor requirements in the College of Arts and Sciences, apply for admission to the department of their major where they will be expected to complete two or three years of preprofessional study, depending on their respective department. Admission is selective and is based upon the recommendation of the admission committees of the department.

Graduation Requirements

For graduation with a Bachelor of Arts in Environmental Design, Bachelor of Arts in Urban Planning, or Bachelor of Science in Building Construction, satisfactory completion of the respective four-year curriculum is required. Receipt of the Bachelor of Landscape Architecture degree requires satisfactory completion of a five-year curriculum.

Students majoring in landscape architecture, urban planning, or building construction must maintain a yearly 2.30 grade-point average in the preprofessional third, fourth, and fifth years of the program and a 2.50 grade-point average in all their respective departmental courses. Architecture majors in the last two years of the curriculum must demonstrate what the faculty considers to be promising performance in the design studio as well as maintain a yearly cumulative 2.30 grade-point average.

Final-Year Residence

To be recommended for a first or subsequent bachelor's degree, a student must complete his final year of course work (at least 45 credits) as a matriculated student in residence at the University. Exceptions to this rule are the responsibility of the dean of the college or school awarding the degree.

Graduate Programs

The College also offers programs leading to the Master of Architecture, Master of Urban Planning, and Doctor of Philosophy in the field of Urban Planning.

Students who intend to work toward one of these degrees must apply for admission to the College of Architecture and Urban Planning and to the Graduate School and meet the requirements outlined in the *Graduate Study* section of this catalog.

ARCHITECTURE

Chairman

Thomas L. Bosworth
208F Gould Hall

Assistant to the Chairman

W. Jean Skirvin
208D Gould Hall

Study is offered in architecture at the undergraduate and graduate levels leading to the Bachelor of Arts in Environmental Design and Master of Architecture respectively. Premajors in Architecture take the first two years of their program in the College of Arts and Sciences or must take its equivalent on some other campus.

Upon successful completion of these premajor years, a student may apply for admission to the Department of Architecture, within the limits of its enrollment quota, as a regular or transfer student for the two-year preprofessional architecture undergraduate program. Students successfully completing this two-year period will graduate with the degree of Bachelor of Arts in Environmental Design. At this point, a student may, if accepted, apply for admission to the Graduate School where he enters the two-year professional program leading to the Master of Architecture degree. Application must be made both to the Graduate School and to the Graduate Program Adviser in Architecture.

Students with equivalent baccalaureate degrees in architecture or related fields granted by accredited institutions are encouraged to apply for graduate study in architecture at the University of Washington. Those with five-year Bachelor of Architecture degrees can reasonably expect to complete requirements for the Master of Architecture degree in four additional quarters. Students with four-year bachelor degrees in other fields may expect completion in approximately three and one half academic years. Such students ordinarily apply to the Graduate School and the graduate program in architecture and, on admission, complete any preprofessional course requirements. They then continue on for their concluding two years of study, receiving the Master of Architecture upon successful completion of the program.

Within the curriculum, history provides a perspective of man's development and a reference base for an appreciation of its future implications. Theory and environmental awareness are stressed to understand the total effect that changing space and urban forms will have on man's environment. Knowledge of the humanities and social sciences enables the student to adjust to his working world and to contribute to society through his acquired professional competence.

Methods and procedures are presented to engender ideas and stimulate the creative process, its new tools and programming techniques, both graphic and quantitative. Communications are stressed. Mathematics, the natural and physical sciences, and structures are covered in formal courses designed to foster the understanding and implementation of new forms for a new era.

The resulting premajor, preprofessional, and professional programs in architecture are designed to encourage the architect, through his creative ability and knowledge of the arts and sciences, toward providing a physical environment conducive to the fulfillment of man's greatest aspirations.

Undergraduate Program

Director

Claus Seligmann

208H Gould Hall

The four-year curriculum leading to the Bachelor of Arts in Environmental Design is listed here.

REQUIREMENTS FOR PREMAJORS

First and Second Years

(College of Arts and Sciences)

Premajors in the College of Arts and Sciences must plan their programs to satisfy the proficiency requirements of that College. To meet the requirements for architecture premajors, such planning should include the following:

	CREDITS
Social Sciences Distribution*	min. 20
Humanities Distribution* (max. 9 art laboratory credits)	min. 20
Natural Sciences Distribution*	
(including Math 105, Elementary Functions)	min. 20
Other Electives†	30
	90

*In the humanities, social and behavioral sciences, and natural sciences, choices are to be made from courses included in the College of Arts and Sciences *Distribution List*, usually excluding only those titled architecture or mathematics. Most students planning their programs toward architectural licensing and general practice will wish to elect natural sciences work in general physics (usually Physics 114, 115, 116 and Physics 117, 118, 119). The list may be found in the *Arts and Sciences* section of this catalog.

†Choice of electives shall include a minimum of 9 credits from the following or their equivalent: Mathematics 114 (Elementary Computer Programming), 124, 125, 126 (Calculus with Analytic Geometry), 157 (Elements of Calculus), 170, 171 (Theory of Arithmetic), 281 (Elements of Statistical Method), 305 (Introduction to Mathematical Logic), 374 (Principles of Digital Computers and Coding); Philosophy 120 (Introduction to Logic), 370 (Intermediate Logic), 463 (Philosophy of Mind); Speech 230 (Essentials of Argument); Engineering 141 (Computer Applications to Engineering Problems I).

PREPROFESSIONAL REQUIREMENTS

Third Year

ARCH 300, 301, 302	Introduction to Design—Laboratory	12
ARCH 310, 311, 312	Introduction to Design Graphics	6
ARCH 320, 321, 322	Introduction to Structural Theory I, II, III	9
ARCH 330, 331, 332	Introduction to Building Methods, Materials, and Assemblies I, II, III	6
ARCH 340, 341, 342	Environmental Awareness: Ecosystems, Appreciation, Prognostics	9
ARCH 350, 351, 352	Survey of Environmental Arts I, II, III	9
		51

Fourth Year

ARCH 400, 401, 402	Introduction to Architectural Design Laboratory	18
ARCH 460	Design Theory and Analysis	3
ELECTIVES (selected from list of recommended courses and sequences)		
Environmental History		3
Preprofessional		9
Other (preprofessional or nonprofessional)		12
		45



Graduate Program

Graduate Program Adviser

Grant Hildebrand

208M Gould Hall

The program leading to the degree of Master of Architecture stresses professional consultation with emphasis on the analysis of the forces which shape architecture, such as economics, structure, history, mechanical and electrical equipment, aesthetics, and social and psychological influences. The student selects his study in various areas of interest with special emphasis on curriculum concentrations listed below. The faculty works with each student in the selection and development of studies to complement the student's investigation.

The graduate program is offered to individuals of substantial educational achievement who desire concentrated individual study. Its objective is to provide the graduate student with the scholarly and professional means to evaluate and implement his role of complex responsibilities and opportunities in the rapidly changing architectural profession.

Curriculum Concentrations

The following curriculum concentrations are available within the framework of the general objective, the student's choice depending on his academic and professional background and special interests:

General Architectural Practice
Design Techniques
Industrialized Building Systems
Architectural Technology
Structures
Urban Design
History, Theory, and Criticism
Community Practice
Human Needs Analysis

Special Study

A student may, with the permission of the Graduate Program Adviser, pursue a special study in any area for which he is suitably prepared and in which the faculty can provide adequate guidance.

Students are encouraged to select areas of their own interest within the resources represented by the College, the University, and the community under the guidance of the graduate faculty. All students, regardless of their areas of study, are encouraged to enroll in a seminar sequence relating to environmental issues.

Fifth and Sixth Years

(Normally following receipt of the Bachelor of Arts in Environmental Design and admission to the Graduate School)

CREDITS

ARCH 500, 501 Architectural Design Laboratory	12
Architectural Studies Electives (selected from list of recommended sections in special studies in architectural design, special studies in architecture, and architectural research; some require concurrent registration in allied professional courses)	24
Professional Electives (chosen with approval of the graduate program adviser from list of recommended courses and sequences in the following fields):	45
(a) Advanced studies in professional fields allied to architecture: urban planning, landscape architecture, building construction	
(b) Environmental history and theory	
(c) Environmental Technology: Advanced structural design, design of building equipment, building construction, architectural administration	
(d) Human, social, and behavioral implications in environmental studies	
(f) Architectural graphics	
(g) Building economics	
(h) Advanced design methods	
(i) Other Department of Architecture programs	
(j) Offerings of other University departments	
Thesis, terminal project, or approved terminal sequence (topic options are available; see your adviser)	9
	90

A student who has a five-year Bachelor of Architecture degree from an approved institution may be admitted to this program with advanced standing upon application to the College of Architecture and Urban Planning and to the Graduate School.

LANDSCAPE ARCHITECTURE

Chairman

Robert Buchanan

348 Gould Hall

In the last ten years the opportunities, role, and image of the professional landscape architect have changed considerably. This is a result of the increased public concern, governmental support, and individual interests in conservation, recreation, and open space planning and design for cities and suburbs, redevelopment and renewal, and aesthetics of environmental planning and design. The trend will continue to place a great demand on the schools of landscape architecture to train professionals who are qualified to deal with the range of landscape problems affecting environmental quality in and around our urbanizing centers.

Landscape architecture is a planning and design profession that emphasizes the physical and social aspects of man's use of exterior spaces in both natural and man-made landscapes and in urban and rural areas. While other professions such as architecture, engineering, or city planning also deal with man-made relationships, the landscape architect enjoys a position of fundamental and special relevance regarding the relationship between people and the natural environment. The profession is concerned with understanding and protecting the environment and, in this respect, must deal with specific technological problems relating to

natural systems (in addition to those that are more closely allied with architecture or engineering), aesthetic principles that are based on nature as well as man's artistic and cultural accomplishments, and the social implications of prescribing environmental character for the general public and specialized clients. Another important concern is the basic question of resource allocation and management.

Landscape architects may be private practitioners or may be employed by various planning offices, industrial firms, educational institutions, or public agencies. The work may include investigation, selection and allocation of land and water areas for appropriate uses; feasibility studies; formulation of graphic and written criteria to govern land planning and construction programs; preparation, review, and analysis of master plans for land use and development; production of graphic area plans; preparation of working drawings such as site plans, planting plans, and construction details; specifications; cost estimates and reports for land development; collaboration in design with respect to the functional and aesthetic requirements of the areas on which they are to be placed; negotiation and arrangement for execution of landscape architectural projects; and field supervision or inspection of landscape architectural construction, restoration, and maintenance. Landscape architects are assuming a guiding role in the development and conservation of regional resources, protecting the national landscape, becoming increasingly involved in the decision-making process affecting large areas of public lands for parks, recreation, open space, new town and subdivision design, urban design, and transportation corridor selection.

Program of Study

Adviser

Donald K. Sakuma
348 Gould Hall

The five-year curriculum leading to the professional degree of Bachelor of Landscape Architecture is described as follows.

REQUIREMENTS FOR PREMAJORS (College of Arts and Sciences)

For maximum flexibility in program planning it is recommended that Landscape Architecture premajors satisfy the proficiency requirements of the College of Arts and Sciences. In addition such students must satisfy the following requirements:

First and Second Years	CREDITS
SOCIAL SCIENCES	min. 20
HUMANITIES (including 3 credits Art Laboratory)	min. 20
NATURAL SCIENCES (Geological Sciences 101; Biology 101-102; Botany 113)	min. 20
ENGR 161 Plane Surveying	3

*ARCH 300, 301, 302 and 310, 311, 312 Introduction to Design Laboratories and Design Graphics	18
ART LABORATORIES (these plus Art Laboratory for humanities credit to be selected from Art 105, 106, 107 Drawing; 109, 110 Design; 129 Appreciation of Design; 259 Water-Soluble Media; 272 Beginning Sculpture Composition)	min. 9

90

THREE-YEAR PROFESSIONAL REQUIREMENTS

Third Year

ARCH 340, 341, 342 Environmental Awareness: Ecosystems; appreciation; prognostics (two of three)	6
ARCH 350, 351, 352 Survey of Environmental Arts (two of three; Urban Planning 489 may be substituted for one)	6
L ARC 301, 302, 303 Site Planning and Landscape Design Studios	18
L ARC 331, 332, 333 Landscape Construction	12
L ARC 361 Theory and Perception	3
Approved Electives	3

48

Fourth Year

L ARC 352 History of Landscape Architecture	3
L ARC 401, 402, 403 Landscape Design Studio	18
L ARC 411, 412 Landscape Graphics	4
URB P 400 Introduction to Urban Planning	3
BOT 331 Ornamental Plants	3
Geography Elective	3
Botany or Forest Resources Elective	5
Approved Electives	9

48

Fifth Year

L ARC 404, 405, 406 Landscape Design Studio	18
L ARC 422 Planting Design	4
L ARC 473 Office Procedure	3
URB P 479 The Urban Form	3
Forest Resources Elective	3
Sociology Elective	5
Approved Electives	12

48

*Admission arranged for "selected premajors." Other students should choose 18 additional art lecture and laboratory electives. See adviser for details.

URBAN PLANNING

Chairman

Arthur L. Grey, Jr.
410 Gould Hall

The making of plans for cities has a long history. The development of urban planning as a distinct profession and field of study is, however, of recent origin. This development is a consequence of several factors. One is the rapid growth of population and its concentration in increasingly large urban agglomerations. Another is the rapid development and spread of technological innovation. The third factor is the specialization of knowledge and division of responsibility for the setting in which man works and dwells. Urban planning is a response to these trends. It endeavors to draw together ideas and information concerning man's interactions with his surroundings.

Urban planning is concerned with the rational organization and use of man-made environments, and is based



upon an understanding of institutions, technology, and man's aspirations and opportunities. Urban planning makes its contribution in the integrated application of knowledge from diverse fields. Its own specialized concern is with the improvement of existing environments and organization of new surroundings. Planners conduct research on the nature of man-made environment and the processes and directions of change, as well as work in the formulation of community programs dealing with human resource objectives. They develop alternatives, propose solutions to environmental and community problems, and develop and apply methods for evaluating alternatives. Planners exercise responsibilities for the administration of programs to prepare plans and carry them into effect.

The Department of Urban Planning offers three degree programs. The undergraduate curriculum leading to the Bachelor of Arts degree with a major in urban planning is intended to provide a general education in the urban field as well as to provide preprofessional emphasis for the student contemplating a career in urban planning. Such students take the first two years of their programs in the College of Arts and Sciences at the University of Washington, or take an equivalent program on some other campus. Upon successful completion of these premajor years, students may apply for admission to the College of Architecture and Urban Planning as regular or transfer students for the two-year preprofessional urban planning program. Students successfully completing this two-year period will graduate with the degree of Bachelor of Arts in Urban Planning.

The Master of Urban Planning degree is the normal educational qualification for professional practice of city or regional planning, including specialized research and design positions as well as generalist planning and administrative positions in a wide variety of public agencies and consulting firms. The Master of Urban Planning degree is a two-year (six-quarter) program.

The Doctor of Philosophy degree is awarded in recognition of education and ability which should lead to distinction in scholarly teaching, research, and community service activities. This program normally requires two to three years, depending on previous education and experience following completion of the master's degree or its equivalent in planning or related fields.

All three of the degree programs in this Department are recognized for purposes of corporate membership by the American Institute of Planners.

Special Facilities

There are opportunities for direct involvement in current research programs of the Department. In addition,

the Department of Urban Planning has a close affiliation with the Urban Data Center situated in the Department of Civil Engineering, which provides specialized facilities and services the general area of urban information systems. The Department is also associated with the Center for Urban and Regional Research of the University's Graduate School and with the Bureau of Community Development.

Undergraduate Program

Adviser

Don A. Denison
410 Gould Hall

Bachelor of Arts in Urban Planning

REQUIREMENTS FOR PREMAJORS (College of Arts and Sciences)

First and Second Years

Premajors spend their first and second years in the College of Arts and Sciences where they plan their programs to satisfy the proficiency requirements of that college. All premajors must satisfy the following distribution and electives requirements:

	CREDITS
Social Sciences	min. 20
Humanities	min. 20
Natural Sciences	min. 20
Electives	min. 30
	<hr/> 90

Eligibility for transferring as juniors to the Department of Urban Planning includes a minimum 2.00 grade-point average in each distribution area of social sciences, humanities, and natural sciences. See adviser for details.

Preprofessional Requirements

Third Year	CREDITS
*Social Structure Core Area	min. 12
†Environmental Structure Core Area	min. 12
‡Decision Processes Core Area	min. 12
URB P 400 Introduction to Urban Planning	3
URB P 479 The Urban Form	3
URB P 489 History of City Development	3
	<hr/> 45

Fourth Year

ARCH 300, 301 Introduction to Design Laboratory	8
ARCH 310, 311 Introduction to Design Graphics	4
URB P 480 The Urban Planning Process	4
URB P 498 Special Topics	6

*Social Structure Core Area: Courses, usually at the 300 and 400 level, draw from such backgrounds as sociology, anthropology, history, psychology, and philosophy, dealing with the nature and structure and functioning of social groups and organizations. Area selections must include at least two courses which deal with the problems and life-situation of one of America's minority groups.

†Environmental Structure Core Area: Courses, usually at the 300 or 400 level, draw from such areas as geography, biology, forest resources, civil engineering, and environmental health sciences, dealing with the nature, structure, and functioning of predominantly natural systems.

‡Decision Processes Core Area: Courses, usually at the 300 and 400 level, draw from such disciplines as economics, political science, business administration, law and government, public administration, and operations management, dealing with the analytic, descriptive and/or administrative facets of social decision making.

URB P 499	Special Projects in Urban Planning	5
and 18 credits from the following:		
URB P 425	Introduction to Urban Transportation	3
URB P 430	Quantitative Methods in Urban Planning	3
URB P 446	Field Study	4 max. 8
URB P 451	Regional Planning and Development	3 or 5
URB P 460	Metropolitan Area Government	5
URB P 475	Directed Social Change	3
URB P 482	Urban Community Facilities	3
URB P 485	Housing	3
URB P 490	Urban Planning Policies and Programs	3
URB P 498	Introduction to Urban Design	4
ARCH 400, 401	Introduction to Architectural Design Laboratory (Urban Design)	12
To total		45

Graduate Programs

Graduate Program Adviser

Alan Rabinowitz
410 Gould Hall

Master of Urban Planning

The master's degree program is professionally oriented. This program draws students from a variety of backgrounds such as sociology, economics, geography, political science, civil engineering, and architecture. Selective urban study and technique courses are taken to provide a basis for professional courses.

The degree of Master of Urban Planning will be awarded upon satisfactory completion of the course requirements, a thesis, and an oral examination. The varied background of study and experience found among students working for this degree requires some adjustment of the student's program to meet individual needs and objectives.

Further details on the program, the requirements, the emphases, and current course offerings, and information on the variety of financial aids available may be obtained by writing to the Graduate Program Adviser of the Department of Urban Planning.

Although the concerns of urban planning are synoptic, in order to cope with specialization in other fields, it is necessary within urban planning to develop special competencies. Several different lines of interest are represented in the activities of the Department: metropolitan and regional planning, urban development and housing, urban design, urban information systems and quantitative methods, transportation planning, and social resources planning. The student working toward a master's degree is presented with opportunities to concentrate his work in one of these fields while pursuing the general program.

The urban design subcurriculum is for students with an architectural or landscape-architectural background. This is conducted in conjunction with the Department of Architecture.

There is no preferred major field of undergraduate study in preparation for graduate education in the Department of Urban Planning. By giving some prior attention to the organization of his undergraduate program, the student may better prepare himself to pursue a specialty in the master's program without extending his period of study beyond the normal two years. Such preparation will include course work in a social science, urban study, and background courses, and, when available, courses specifically oriented to urban planning, such as those undergraduate courses offered by the Department of Urban Planning.

Course requirements specify a core of knowledge embodied in required courses; two additional areas that may be satisfied prior to enrollment in the Master of Urban Planning curriculum; electives chosen with the advice and consent of an adviser in order to develop depth or breadth in planning; specialties within this and related fields appropriate to the background and interests of each student; and a master's thesis project.

Required Core Courses		CREDITS
URB P 430	Quantitative Methods in Urban Planning	3
URB P 500	Survey of Urban Planning	3
(Not required of those who have had URB P 400)		
URB P 501	Resources for Urban Planning	2
URB P 502	Graphic Communication in Urban Planning	3
(Not required of those with substantial training in architecture, landscape architecture, or undergraduate city planning studio courses.)		
URB P 521	General Urban Planning	2
URB P 541	General Urban Planning Laboratory	5
URB P 542	Specialized Planning Laboratory	5
URB P 504	Administrative and Legal Framework of Planning	3
URB P 550	Research Seminar	2
URB P 580	Theories and Methodology of Planning I	4
URB P 700	Master's Thesis	min. 9

Cultural Diversity and Environmental Systems Requirements

At least a minimal understanding of these subjects is obviously prerequisite to both intelligent analysis and responsible planning of urban or regional phenomena. For this reason the Department of Urban Planning has defined "minimal exposure" to these subjects as two courses (total of 5 to 7 credits) dealing with cultural diversity and one course (3 credits) dealing with environmental systems. Both requirements can be satisfied by a number of graduate or undergraduate courses at the University or by similar courses elsewhere.

Electives

Students are expected to use electives to develop either an area of specialization or a considerable breadth of knowledge relevant to urban or regional planning. Elective courses should be chosen in conjunction with the required courses and with Urban Planning 542, 550, and 700. For those who choose to follow the urban design option, a core of courses and electives is available to students from the fields of architecture, landscape architecture, and urban planning.



Similar specialization in other areas is also possible within the department; namely, comparative urbanism, information systems and quantitative methods, regional and environmental planning, social resources planning, urban housing development and planning economics, and urban transportation. Other areas of concentration may be suggested by reading the descriptions of elective courses offered by this department and those offered in other colleges and schools in the University.

Master's Thesis

A Master of Urban Planning thesis is a report which demonstrates a student's ability to conceive, conduct, and report the results of a substantial, individual study of some subject which is relevant to urban planning concerns. The topic of the thesis may be broad or narrow, academic or applied, synoptic or analytical, empirical or theoretical, and anywhere within the wide range of urban planning concerns. The written research report is the normal medium of communication, but this may be supplemented or replaced by other media appropriate to the subject matter.

Doctor of Philosophy

The Ph.D. degree in the urban planning field indicates scholarly abilities, long-term intellectual interests, and substantial achievements related to the discipline of planning. The requirements leading to this degree are devices through which the student may demonstrate that he has these qualities and is capable of independent work worthy of the attention of his peers in the academic and professional planning communities. This doctoral program is not viewed as an additional level of training for professional practice.

The program has a minimum of fixed requirements in the Department of Urban Planning additional to those of the Graduate School. A preliminary examination may be required before a Supervisory Committee is appointed to direct the student's specialized preparation for the General Examination. The first of two major requirements is the passing with distinction of a set of written and oral examinations that will evaluate the student's preparation in four areas: (1) The specialized area of urban planning in which he expects to make his major contribution, including but not limited to the topic of his proposed dissertation; (2) the theory, methods, and processes of planning; (3) the management and use of quantitative data for planning research and analysis; (4) the methods and major theories of some discipline outside of planning, relevant to the specialized area chosen.

The second major requirement is completion of a satisfactory dissertation and the Final Examination.

Students interested in this program are invited to consult the Doctoral Program Adviser about their specific academic interests and admission and program requirements.

BUILDING CONSTRUCTION

Chairman

George R. Hutchinson
224 Gould Hall

The Building Construction Program of the College has the objective of developing individuals for management, business, and technical positions within the building industry. This comprises five general areas of activity: development, design, construction, supporting industries, and government. Within each of these areas there is need for individuals with a basic knowledge and concern for architecture and building and with a more detailed technical competence.

Development: The developer has need for individuals skilled in areas such as project promotion, building finance and design, and construction liaison.

Design: The design professions—architecture and engineering—are steadily expanding the scope and variety of their services, involving personnel skilled in areas that include business management and development, construction financing, construction supervision, and building economics.

Construction: The construction industry is becoming more specialized and demanding, creating a need for individuals competent in areas such as construction management and supervision, estimating, quantity surveying, and business management.

Supporting industries: Mass demand and a revolution in building techniques are greatly expanding the industrial base of building, and there is need in this area for individuals skilled in areas that include materials and product research, material distribution and sales, and material and product production.

Government: The government, at local, state, and federal levels, is playing an expanding role in the building industry and, consequently, is requiring more personnel in areas such as design and construction liaison, building and contract document analysis, building finance, and code establishment and enforcement.

In order to meet the Building Construction program's diverse requirements, the curriculum is divided into three main areas:

Required courses: These include structural design, building construction, mechanical equipment of build-

ings, urban planning, the humanities, physics, mathematics, business administration, economics, and general University requirements.

General elective courses: Such courses are elected by the student, with the help of his adviser, to broaden his knowledge and appreciation of the society in which he lives.

Recommended elective courses: The student similarly elects courses to complement and strengthen his specific area of interest within the field of his major.

It is required that the student earn a specific number of quarter credits in each of the above three areas in order to ensure a proper academic balance.

Program of Study

The following four-year curriculum leads to the degree of Bachelor of Science in Building Construction.

First Year		CREDITS
CHEM 100 OR 101	Chemical Science or General Chem	5
MATH 105, 124, 125	Elementary Functions, Calculus with Analytic Geometry	15
PHIL 100	Introduction to Philosophy	5
PSYCH 100	General Psychology	5
SOC 110	Survey of Sociology	5
APPROVED ELECTIVES		12
(Not less than 5 of these elective credits must be satisfied in the area of writing.)		

47

Second Year		
ARCH 320, 321, 322	Introduction to Structural Theory I, II, III	9
ACCT 210, 220, 230	Fundamentals of Accounting, Basic Accounting Analysis	9
B CON 330, 331, 332	Building Methods and Materials I, II, III	6
PHYS 114, 115, 116	General Physics	12
PHYS 117, 118, 119	General Physics Laboratory	3
APPROVED ELECTIVES		9

48

Third Year		
ARCH 420, 421, 422	Structural Design I, II, III	12
ARCH 430, 431, 432	Environmental Control Systems I, Integrated Building Systems I, II	9
B CON 301, 302	Building Industry	6
B CON 310	History of Building	3
CETC 405	Critical Path Methods of Project Scheduling	3
CETC 407	Contracts and Specifications	
OR		
BG&S 200	Introduction to Law	3 or 5

ECON 211	General Economics	3
ECON 340	Labor Economics	5
Q METH 200	Computer Programming	2
APPROVED ELECTIVES		5 or 3

50

Fourth Year		
B CON 401, 402	Building Estimating	8
B CON 410	Senior Study	4
B CON 420	Building Financing	3
CIVE 366	Soils Engineering	4
ENGR 161	Plane Surveying	3
OPSYS 301	Principles of Operations Analysis	3
Q METH 201	Statistical Analysis	4
URB P 400	Introduction to Urban Planning	3
APPROVED ELECTIVES		15

(Not less than 3 of these elective credits must be satisfied in the area of real estate.)

47

Note: Building Construction majors who plan to take their first two years at a college or university other than the University of Washington will find a rearrangement of the above sequence permits them to defer taking certain specialized courses until their third and fourth years at this University, without altering the content of the Building Construction curriculum. In these circumstances the following adjustments would be made in the curriculum:

From the second year *delete* these courses:

Arch 320, 321, 322 (9)

B Con 330, 331, 332 (6)

and *add* the following courses or their equivalent to the first two years:

BG&S 200, Introduction to Law (5)

Econ 211, General Economics (3) (Econ 200, Introduction to Economics (5) may be substituted)

Engr 161, Plane Surveying (3)

Q Meth 200, Computer Programming (2)

Q Meth 201, Statistical Analysis (4)

The deleted courses will subsequently be added by adjustments made in the student's third and fourth years at the University of Washington.



ARTS AND SCIENCES

Dean

George M. Beckmann
B110 Padelford Hall

Associate Deans

Aldon D. Bell
George C. Buck
Joe S. Creager
Morton Kroll
William L. Phillips
Walter L. Riley

Director of Honors

Aldon D. Bell

A liberal education shapes man toward informed judgment and participation in a democratic society. The individual's acquaintance with both past and contemporary thought in the arts and sciences, his exploration of abstract ideas and their relationships, and his ability to manipulate them are the primary concern of the College of Arts and Sciences.

To the student bent on exploring his own potential, the College offers breadth and depth in the intellectual experience unlimited by vocational or professional considerations. The departments and schools offer nearly one hundred curricula leading to the degrees of either Bachelor of Arts, Bachelor of Fine Arts, Bachelor of Music, or Bachelor of Science, as well as graduate study leading to master's and doctor's degrees.

Included within the subject matter areas are the Departments of Anthropology, Asian Languages and Literature, Astronomy, Atmospheric Sciences, Botany, Chemistry, Classics, Economics, English, Genetics, Geography, Geological Sciences, Germanic Languages and Literature, History, Linguistics, Mathematics, Near Eastern Languages and Literature, Oceanography, Philosophy, Physics, Political Science, Psychology, Romance Languages and Literature, Scandinavian Languages and Literature, Slavic Languages and Literature, Sociology, Speech, and Zoology; the Schools of Art, Communications, Drama, Home Economics, Music, and Physical and Health Education and other programs that offer interdepartmental courses and curricula.

Although some common patterns of study are required of all students, the objectives of the College permit a wide variability in education aims. Certain units of the College combine professional training with general study, but any special goals of a professional or vocational nature are regarded as extensions of the basic bachelor's program.

The first courses offered by the University when it opened on November 4, 1861, were in fields now included within the College of Arts and Sciences. A law of 1863 provided that the University should consist of at least four departments, namely (1) literature, science, and arts, (2) law, (3) medicine, and (4) military science.

As the University grew, the study of the basic arts and sciences was organized within a college, first called the College of Literature, Science, and Arts, and later called successively the College of Liberal Arts, University College, and since 1939, the College of Arts and Sciences. Some former departments of the College have, from time to time, developed into separate colleges dealing with particular professions.

Today the College provides instruction to students in every unit of the University. Preprofessional programs are designed to enrich the general education of students who will enter the College of Architecture and Urban Planning, the College of Education, or the Schools of Business Administration, Law, Medicine, Dentistry, Public Affairs, Social Work, or Librarianship. Students enrolled in other undergraduate colleges of the University are often required to take a large part of their work in courses given in the College of Arts and Sciences, and may elect additional courses as their degree programs permit.

College Facilities and Services

In addition to the facilities ordinarily related to each department of the College of Arts and Sciences, a number of study, research, and cultural facilities are available to all students of the University.

The Henry M. Suzzallo Library is described under the *General Information* section. Twenty branch libraries for special academic subjects are located in other buildings. The undergraduate library, completed in 1971, provides special services for college courses.

The Thomas Burke Memorial Washington State Museum contains natural history collections and anthropological collections of the Pacific Northwest, Oceania, and the Far East. Three University theatres, the Showboat, the Penthouse, and the Glenn Hughes Playhouse, are used throughout the year in the School of Drama program. Radio station KUOW, an FM station operated by the University, and television station KCTS-TV, a community-sponsored project with studios located on campus, are used by students in the School of Communications. The Henry Art Gallery offers a program of exhibitions of recent painting, sculpture, printmaking, photography, and the craft media, film programs, musicales, and other special events. The Center for Asian Arts promotes the study and performance of the music, art, and drama of the Orient. The Center gives performances, arranges exhibits, and encourages work in the creation of actual works of art.

Service-research organizations include the Developmental Psychology Laboratory of the Department of Psychology, which provides clinical training for grad-

uate students, conducts research, and offers consultative service; and the Laboratory Pre-school, which is maintained for teacher training, observations, and demonstrations. The Institute for Economic Research is a research organization affiliated with the Department of Economics. The Institute for Sociological Research and the Center for Studies in Demography and Ecology are maintained by the Department of Sociology.

The Language Laboratory, with 350 individual units for students to practice hearing and speaking foreign languages; the Speech and Hearing Clinic, which offers remedial service to students and others with speech and hearing defects; and the English for Foreign Students program, administered by the Department of Linguistics, assist the student in developing his skills in oral communication.

Excellent teaching and research facilities in the physical and biological sciences are provided for students in the College. Of special interest are the Friday Harbor Laboratories, which offer unusual opportunities for work in the marine sciences; the 267-acre Arboretum, maintained for propagation of plants from all over the world; the cyclotron, Cosmic Ray Laboratory, and Van de Graaff accelerator of the Department of Physics; the several high-speed computing machines in the Computer Center, and the oceanographic research vessels which make field surveys and studies in Puget Sound and the Pacific.

UNDERGRADUATE PROGRAMS

Admission to the College

Admission with Freshman Standing

For general University admission requirements, see *Undergraduate Education* section.

High School Electives

Students who expect to enter the College of Arts and Sciences should select subjects in English, languages, social sciences, natural sciences, mathematics, and fine arts which will provide a well-rounded preparation for college study.

Students who include four years of English, at least three years of a single foreign language, and at least three years of college preparatory mathematics in their high school programs meet the basic proficiency requirement of the College degree program upon entrance to the University, and are thus exempt from the 15 credits of courses in these areas normally required of students as part of their first year in the College.

In addition, intensive preparation in a particular academic area may be appropriate for students who have



specific educational objectives. For example, students who expect to complete a major in mathematics or the physical sciences are generally urged to complete all of the standard mathematics courses offered by their high schools in order to avoid taking review courses for which no college credit is given. Students expecting to complete major programs in chemistry, Germanic languages and literature, mathematics, oceanography, and physics should examine the recommendations of these departments.

GRADUATION REQUIREMENTS

Present requirements for all bachelor's degrees awarded by the College of Arts and Sciences were instituted in Autumn Quarter, 1969. They apply to all students entering the College in autumn, 1969, and thereafter. Other students should consult with the associate dean of the College, B10 Padelford Hall, concerning requirements which they will be expected to meet.

To be awarded a bachelor's degree, students in the College must fulfill a basic proficiency requirement, a distribution requirement, and a major requirement.

Basic Proficiency Requirement

Students of the College are expected to have developed, either in their high school study or early in their college study, fundamental proficiencies in the use of English and one foreign language and ability in quantitative reasoning. These abilities will make advanced study more efficient and meaningful for the student, and requiring competence in them from all students will enable the faculty to assume a minimum level of verbal and mathematical abilities in their courses. Although achievement in these skills is made a part of the degree requirements, many entering students will already have demonstrated an acceptable level of achievement in their high school study. Students whose high school preparation included four years of English, three years of a single foreign language, and three years of college preparatory mathematics are considered to have satisfied the basic proficiency requirement. They may, of course, wish to take additional courses in these fields as electives.

A student who does not satisfy the basic proficiency requirement in this way will be expected during the first year in residence to complete fifteen credits in the areas of verbal and mathematical skills which he and his adviser consider most appropriate to his needs and interests. He may choose to emphasize one skill or refurbish more than one skill, as his assessment of his own capabilities may dictate. Ordinarily, courses used to satisfy this requirement are chosen from English

composition, foreign language, and mathematics. Advanced credit awarded in English, foreign languages, or mathematics on the basis of entrance or placement examinations may be used in the satisfaction of this requirement.

Students entering the College with 85 or more acceptable transfer credits and students who have completed the general education requirements of other accredited colleges or universities are exempt from whatever portion of the proficiency requirement they have not already completed.

Distribution Requirement

The College reserves approximately half of the student's four undergraduate years to develop in him a breadth of knowledge and appreciation and to enable him to explore subjects different in content and method from the one in which he will pursue a special competence. A distribution requirement has the effect of giving some structure to that exploration.

Most of the courses offered in the College, and certain courses offered in other units of the University as well, have been divided into three large fields of knowledge—the Humanities, the Social Sciences, and the Natural Sciences. Each student must select, with the approval of his adviser, at least 20 credits in courses from each of the three fields on the following list (the Distribution List). No course from the department in which the student is pursuing his major field of study may be used to satisfy this requirement. Courses presented to satisfy the basic proficiency requirement may not be counted within the distribution requirement.

The student should study the descriptions of the courses on the Distribution List and choose, with the help of his adviser, sequences of courses which will enable him to extend his present interests and inclinations and to acquire others.

Major Requirement

Among the characteristics of thought which the College attempts to develop in a student are the abilities to manipulate abstract ideas and to explore relationships deeply, confidence in the power of his own intellect, and an awakened intellectual curiosity. These attributes come from thorough study of a subject selected for its fundamental character and its richness of content, which aims at developing a depth of knowledge. This study leads the student to both empirical and theoretical considerations, develops in him a method of independent study, and exposes him to significant problems as yet unsolved. The College provides through a "major"

DISTRIBUTION LIST

HUMANITIES

Minimum of 20 credits required, all outside the major

Anthropology 333, 334, 335, 403, 429, 430, 455, 459, 493

Architecture and Urban Planning: Architecture 150, 151, 250, 340, 341, 342, 350, 351, 352, 450; Landscape Architecture 352, 361; Urban Planning 310, 400, 479, 489

Art and Art History: all undergraduate courses *except* Art 490

Asian Languages and Literature: all undergraduate courses

Biomedical History 401, 419, 420, 430

Classics: all undergraduate courses *except* Latin 475

Communications 321, 324, 326, 370, 373

Comparative Literature: all undergraduate courses

Dance 251, 252, 253, 256, 257, 258, 351, 352, 353, 490

Drama 101, 102, 103, 146, 151, 152, 153, 202, 203, 230, 275, 276, 277, 325, 326, 331, 338, 351, 352, 353, 375, 376, 377, 414, 416, 455, 460, 461, 462, 474, 476, 477, 478, 479, 492, 495

East Asia 240

English: all undergraduate courses

General and Interdisciplinary Studies (GIS) courses as designated

Germanic Languages and Literature: all undergraduate courses

History 311, 312, 411, 412; History of the Americas 402, 405-406, 454; Ancient and Medieval History 334, 452, 453; History of Asia 401, 402; Modern European History 401, 405, 406, 407, 421

Home Economics 240 or 347; 321, 322, 329, 429, 432, 433

Humanities 102, 103

Librarianship 451 or 453; 470

Linguistics 101-102-103, 200, 201, 400, 404, 405, 406, 443, 455

Music: all undergraduate courses *except* 136, 137, 138, 139, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 236, 237, 240, 241, 320, 321, 322, 323, 324, 325, 326, 327, 328, 340, 384, 431, 432, 433, 434, 435, 436, 440, 441, 442, 443

Near Eastern Languages and Literature: all undergraduate courses

Philosophy: all undergraduate courses *except* 110, 113, 120, 230, 231, 370, 410, 460, 463, 465, 466, 470, 472, 473, 474

Physical and Health Education: Dance 283, 364

Romance Languages and Literature: all undergraduate courses

Russia and East Europe 243

Scandinavian Languages and Literature: all undergraduate courses *except* Scandinavian 370, 380, 381

Slavic Languages and Literature: all undergraduate courses

South Asia 291

Speech 100, 101, 102, 103, 140, 220, 240, 320, 345, 347, 349, 400, 420, 421, 440, 442, 444

SOCIAL SCIENCES

Minimum of 20 credits required, all outside the major

Anthropology: all undergraduate Archaeology courses and all undergraduate Anthropology courses *except* 333, 334, 335, 403, 429, 430, 455, 459, 493 and *except* Physical Anthropology courses

Architecture and Urban Planning: Urban Planning 482, 485

Biomedical History: 417, 422, 424, 432

Business Administration: Business, Government, and Society 101, 200, 444; Administrative Theory and Organizational Behavior 440, 460; International Business 310

Communications 150, 200, 201, 202, 203, 226, 314, 320, 338, 400, 402, 406, 411, 414, 443, 470, 480, 485

East Asia: all undergraduate courses *except* 240

Economics: all undergraduate courses

Education: History, Philosophy, and Sociology of Education 479, 480

General and Interdisciplinary Studies (GIS) courses as designated

Geography: all undergraduate courses

History: all undergraduate courses *except* History 311, 312, 411, 412, History of the Americas 402, 405-406, 454, Ancient and Medieval History 334, 452, 453, History of Asia 401, 402, Modern European History 401, 405, 406, 407, 421

Home Economics 350, 354, 356, 409, 454, 457

Inner Asia: all undergraduate courses

Linguistics 451, 452, 453, 461, 462, 463

Philosophy 110, 113, 230, 231, 410, 460, 463, 465, 466

Physical and Health Education: Health Education 250

Political Science: all undergraduate courses

Psychiatry 267, 451, 452

Psychology: all undergraduate courses *except* 102, 200, 201, 202, 203, 211, 212, 222, 302, 314, 406, 409, 416, 417, 421, 422, 423, 425, 475

Russia and East Europe: all undergraduate courses *except* 243

Scandinavian Languages and Literature: Scandinavian 370, 380, 381

Social Science 150

Sociology: all undergraduate courses *except* 223

South Asia: all undergraduate courses *except* 291

Speech 230, 235, 329, 335, 339, 373, 425, 426, 428, 473

NATURAL SCIENCES

Minimum of 20 credits required, all outside the major

Anthropology: all undergraduate Physical Anthropology courses

Astronomy: all undergraduate courses

Atmospheric Sciences: all undergraduate courses

Biochemistry: all undergraduate courses

Biological Structure 301

Biology: all undergraduate courses

Biomedical History 415, 416, 431

Botany: all undergraduate courses

Chemistry: all undergraduate courses

Civil Engineering: Water and Air Resources 450

Fisheries 101

General and Interdisciplinary Studies (GIS) courses as designated

Genetics: all undergraduate courses

Geological Sciences: all undergraduate courses

Home Economics 307, 407, 408, 415

Mathematics: all undergraduate courses *except* 101, 104, 114, 497

Microbiology 101, 301, 400

Oceanography: all undergraduate courses *except* 110, 111, 112

Philosophy 120, 370, 470, 472, 473, 474

Physical and Health Education 331, 332, 333, 480

Physics: all undergraduate courses

Psychology 102, 200, 201, 202, 203, 211, 212, 222, 302, 314, 406, 409, 416, 417, 421, 422, 423, 425, 475

Speech 300, 301, 415

Zoology: all undergraduate courses



requirement the means to satisfy these liberal purposes as well as the desire of students to become proficient in some field. This part of the student's program is determined by the department, school, or faculty committee with which he does his major study. Measured in academic credits, the "major" required of each student consists of a minimum of 50 prescribed credits in a department of the College or a closely related group of departments. Descriptions of major programs are to be found under *Departmental Programs* and *Interdepartmental Programs*.

So that the student will not be tempted to specialize prematurely, the College limits to 90 the number of credits from a single department which may be counted in the 180 credits required for the degree. Certain curricula in art, music, oceanography, and zoology may require more than the 180 minimum.

To be eligible for the bachelor's degree, the student must achieve at least a 2.00 cumulative grade-point average in his major (some departments prescribe a higher minimum grade-point average for the major), as well as a 2.00 cumulative grade-point average for all work done in residence at the University.

General Information

Students should apply for the bachelor degree no later than the first quarter of their final year. A student may choose to graduate under the graduation requirements of the catalog published most recently before the date of his entry into the College, provided that no more than ten years have elapsed since that date and that he has the approval of his major department. As an alternative, he may choose to fulfill the graduation requirements as outlined in the catalog published most recently before the anticipated date of his graduation. All responsibility for fulfilling graduation requirements rests with the student concerned. A student graduating from another college of the University who wishes to receive a degree simultaneously from the College of Arts and Sciences must receive approval from the Associate Dean of the College of Arts and Sciences (B10 Padelford Hall) at least three quarters before completing the requirements for the degree from this College. No student may graduate from the College of Arts and Sciences without a minimum of three quarters of attendance in the College.

College Honors Program

In recognition of its special responsibility to students of superior ability, the College has established a four-year program offering opportunities for greater depth of study and culminating in an honors degree at graduation. Among the features of this program are special

counseling, honors courses, honors sections of regular courses, faculty-student colloquia, and opportunities for independent study.

Students are admitted to the College Honors Program upon invitation by the Honors Council. In order to be considered for admission at entrance, a student must submit an application to the Director of Honors during his final high school semester. Approximately 5 per cent of the entering freshmen are selected on the basis of their high school records and scores on such examinations as those administered by the College Entrance Examination Board, National Merit, and the Washington Pre-College Testing Program. A periodic reclassification based on academic performance at the University makes possible the later admission of students not invited to membership at entrance.

Honors students are counseled by Honors Advisers. During the freshman and sophomore years they are expected to arrange approximately one-half their schedules in honors courses in a variety of academic disciplines. A student may not become a candidate for an honors degree until he has been accepted (usually during the junior year) by a department which offers an honors curriculum (for departmental honors curricula see section on *Departmental Programs*). Students successfully completing a program approved by the Honors Council and the major department are graduated "With College Honors" in the appropriate discipline. Other students, not members of the College Honors Program, who demonstrate superior abilities in a single field of study, may, with the approval of the department, participate in a departmental honors curriculum and receive a departmental honors degree, "With Distinction" in the major field.

The College Honors Program is under the supervision of an Honors Council. The Office of the Director is in C18 Padelford Hall.

CERTIFICATION FOR TEACHING

Students following programs leading to a bachelor's degree in the College of Arts and Sciences may qualify for provisional certification for public school teaching in the state of Washington by including in their degree programs the courses required for certification as determined by the faculty of the College of Education.

All students seeking provisional certification spend their first two years in the College of Arts and Sciences. The relative similarity of the bachelor's degree programs of the two colleges makes it possible for stu-

dents, at the end of their second year, to select the program that best fits their general educational interests and that best prepares them for the level at which they seek to be qualified for teaching.

Students preparing for certification in elementary education must fulfill an elementary education minor as well as the professional education sequence of courses; they ordinarily should, therefore, seek admission to the College of Education in their junior year. Students preparing for teaching in a high school may seek admission to the College of Education as juniors, or may continue in the College of Arts and Sciences, including as electives the courses listed in the "Professional Education Sequence (Secondary Emphasis)" described in the *College of Education* section.

Students in either College must make formal application to be admitted into the Teacher Education (Certification) Program through the College of Education Advisory Office, 207 Miller Hall. Students seeking acceptance in the Teacher Education (Certification) Program should examine the *College of Education* section. In general, acceptance requires a minimum of 90 approved credits, a cumulative grade-point average of 2.50, satisfactory completion of Education 288, and evidence of good physical and mental health.

GRADUATE PROGRAMS

Students who intend to work toward advanced degrees must apply for admission to the Graduate School and meet the general requirements outlined in the *Graduate Study* section of this catalog, as well as the requirements established by the graduate faculty in the department or unit offering the degree program. Graduate students must satisfy the requirements for an advanced degree which are in force at the time the degree is to be awarded.

Graduate programs leading to the master's degree are available in the fields of anthropology, art, Asian languages and literature, astronomy, atmospheric sciences, botany, chemistry, classics, communications, drama, economics, English, genetics, geography, geological sciences, geophysics, Germanic languages and literature, history, home economics, linguistics, mathematics, music, Near Eastern languages and literature, oceanography, philosophy, physical education, physics, political science, psychology, Romance languages and literature, Scandinavian languages and literature, Slavic languages and literature, sociology, speech, and zoology, as well as in several interdisciplinary fields. (See section on

Interdisciplinary Graduate Degree Programs in this catalog.)

Graduate programs leading to the degree of Doctor of Philosophy are available in the fields of anthropology, Asian languages and literature, astronomy, atmospheric sciences, botany, chemistry, classics, communications, economics, English, genetics, geography, geological sciences, geophysics, Germanic languages and literature, history, linguistics, mathematics, music, oceanography, philosophy, physics, political science, psychology, Romance languages and literature, Scandinavian languages and literature, Slavic languages and literature, sociology, speech, and zoology, as well as in several interdisciplinary fields. (See section on *Interdisciplinary Graduate Degree Programs* in this catalog.)

A graduate program leading to the degree of Doctor of Musical Arts is offered through the School of Music and also a graduate degree program leading to the Doctor of Arts degree is offered through the Department of Germanic Languages and Literature.

PREMAJOR AND PREPROFESSIONAL PROGRAMS

Central Advisory Office
Richard Simkins
Director of Academic Counseling
B10 Padelford Hall

Although many students entering the College will have chosen a department in which to pursue concentrated study, others will enter with objectives less precisely focused and will be enrolled in premajor status.

For those students who would like to follow a basic course of study in preparation for training in professional schools, the College provides advising service in the following preprofessional programs: architecture, business, dental hygiene, dentistry, education, landscape architecture, medical technology, medicine, occupational therapy, physical therapy, prosthetics and orthotics, and urban planning. The requirements listed below for preprofessional programs are *minimums*. Since many professional programs have more qualified applicants than can be accommodated, satisfaction of the minimum requirements is no guarantee of admission.



Premajor Status

Those students in the first or second year who did not make a definite choice of major before entering the University are designated as premajor students. They may select, in consultation with an adviser, a program of studies which will meet the general requirements of the College and at the same time provide opportunity for experimentation and exploration in its many subject areas. Each program is planned according to the individual interests of the student. Because an important part of the program leading to the bachelor's degree is the major concentration, the student should make a selection of major whenever he is reasonably confident of his educational objectives. Ordinarily, he will want to select a major by the end of his sophomore year in order to be assured of completing his degree in the normal period.

Students preparing to enter graduate professional schools may, upon admission to the College, select a department in which to follow a major program, or may follow a premajor program for their first two years. For information concerning the requirements of various graduate and professional schools at the University of Washington, see the sections of the catalog pertaining to these schools.

Dental Hygiene, Preprofessional Program

The two-year predental hygiene program is designed to prepare students for admission to the major in dental hygiene in the School of Dentistry, described in the *School of Dentistry* section.

In this program, applicants will complete 90 quarter credits in the College of Arts and Sciences. They will be expected to meet the basic proficiency and distribution requirements of the College and will include in their program courses in biological sciences, chemistry, psychology, sociology, and speech.

Dentistry, Preprofessional Program

This program is designed for students in the College of Arts and Sciences who plan to enter a dental school when their preprofessional training is completed.

Requirements for admission vary from dental school to dental school. Thus, students wishing to apply to the University of Washington School of Dentistry should refer to the requirements listed under *Admission* in the Dentistry section of this catalog. Students planning to attend other dental schools, however, should choose courses to meet the requirements of those particular schools.

The adviser should be consulted about the dental aptitude test.

The student is advised to select a major as soon as possible. First-year University of Washington School of Dentistry courses may be applied as general upper-division elective credits toward a bachelor's degree in the College of Arts and Sciences, provided students have met the general College requirements and the requirements of their major department.

Medical Technology, Preprofessional Program

The medical technology program is designed to train young men and women for professional work in hospital, clinic, public health, and medical research laboratories. The prescribed preparatory program consists of two years of preprofessional training in the College of Arts and Sciences with an emphasis upon certain courses in chemistry, biological sciences, and mathematics. At the end of the second year, students may apply for admission to the curriculum in Medical Technology in the School of Medicine. Details of the program in medical technology are listed in the *School of Medicine* section under "Laboratory Medicine."

Medicine, Preprofessional Program

This program is designed for students in the College of Arts and Sciences who plan to enter a medical school when their preprofessional training is completed.

As recommended by the Association of American Medical Colleges, the premedical course should include English composition, inorganic chemistry, organic chemistry, physics, and biology. Requirements for admission vary from medical school to medical school. Students wishing to apply to the University of Washington School of Medicine should refer to the requirements listed under *Admission* in the *School of Medicine* section of this catalog. Students planning to attend other medical schools, however, should choose courses to meet the requirements of those particular schools.

In general, medical school admissions committees favor a broad program of studies with the inclusion of as much as possible in the humanities and social sciences. Premedical students are expected to demonstrate their capacity to handle medical school courses by their performance in the science courses mentioned above and by their performance on the Medical College Admission Test. Usually a grade-point average of at least 3.00 is required, but some schools accept minority students into special programs.

All students in the premedical program are urged to select a major by the end of their first year and in no

case later than the end of the second year. A student may follow a major in any department in the College. Each student, with an adviser in his or her major department and a premedical adviser, then plans a program designed to complete the requirements for entrance into medical school and for the bachelor's degree. First-year University of Washington School of Medicine courses may be applied as general upper-division elective credits toward a bachelor's degree in the College of Arts and Sciences, provided the student has met the general College requirements and the requirements of his major department.

During the second year, a premedical adviser should be consulted about taking a medical admissions test and applying for admission to medical school. Students must arrange for the medical admissions test well in advance of their application to a medical school.

Occupational Therapy, Preprofessional Program

This two-year preprofessional program is designed to prepare students for admission to the curriculum in Occupational Therapy in the School of Medicine, which confers the degree of Bachelor of Science in Occupational Therapy. Students are expected to meet the basic proficiency and distribution requirements of the College, with minor modifications. A complete description of the occupational therapy curriculum is found in the *School of Medicine* section under "Physical Medicine and Rehabilitation."

Physical Therapy, Preprofessional Program

The two-year physical therapy preprofessional program in the College of Arts and Sciences prepares students for admission to the curriculum in Physical Therapy in the School of Medicine, which confers the degree of Bachelor of Science in Physical Therapy. The curriculum is fully approved by the American Physical Therapy Association and by the Council on Medical Education and Hospitals of the American Medical Association. A complete description of the four-year program in physical therapy is given in the *School of Medicine* section under "Physical Medicine and Rehabilitation."

Prosthetics-Orthotics, Preprofessional Program

The two-year preprofessional program is designed to prepare students for admission to the curriculum in Prosthetics-Orthotics in the School of Medicine. This program confers a Bachelor of Science degree. A complete description of the Prosthetics and Orthotics curriculum is given in the *School of Medicine* section under "Physical Medicine and Rehabilitation."

INTERDEPARTMENTAL PROGRAMS

GENERAL AND INTERDISCIPLINARY STUDIES

Director

Aldon D. Bell

C18 Padelford Hall

The faculty of the College of Arts and Sciences authorized in June 1969 the establishment of the Division of General and Interdisciplinary Studies in order to develop for undergraduate students a wider range of educational opportunities. The Division encourages and supports both curricular and other educational innovation. The Division itself initiates such innovation, and does whatever is possible to support faculty and students interested in new opportunities.

General Studies courses (listed as "GIS" and "G ST") are sponsored by the Division. One opportunity which has been available to undergraduates for several years has been the "atypical major," especially devised for those students who find that their individual educational objectives cannot be achieved through one of the conventional departmental major programs of the College of Arts and Sciences. The student, in conjunction with the Director of the Division and with interested faculty members, constructs his own major program, and the Division appoints a faculty advisory committee to counsel and supervise the student to graduation. The atypical major allows any student to devise from the rich resources of the University a curriculum which will suit his own educational goals. Some recent individual majors, most of which have a decided interdepartmental flavor, are ethnomusicology, history and comparison of religions, humanities in the twentieth century, oriental philosophy and literature, natural resources, the creative arts and elementary education, conflict studies, the creative arts and psychology, and the twentieth-century technological revolution.

Since the individual major is not following a precise set of requirements leading to a conventional major, a specially constructed program places considerable responsibility upon the student himself. While this is precisely the goal of higher education, the immediate responsibility of such a program may not at all suit the attitudes and needs of most students. In general, a student who is interested in the individual major is expected to have a cumulative grade-point average of approximately 2.50. He is also expected to fulfill the general requirements for a degree in the College of Arts and Sciences,



unless there is some special educational reason why exceptions might be made.

The Bachelor of Arts degree is awarded when the major is clearly in the humanities or social sciences, and the Bachelor of Science degree when the major is clearly in the natural sciences.

Students interested in discussing the possibility of an individual major should talk with an academic adviser in the Division.

Honors in General Studies

Adviser

Aldon D. Bell

C18 Padelford Hall

Members of the College Honors Program who have successfully completed an individual major curriculum approved by the student's faculty supervisory committee may receive a bachelor's degree "With College Honors in General Studies," providing the following conditions have been met:

1. Completion of the lower-division honors requirements specified for all honors candidates.
2. Completion of not less than 10 credits in an upper-division program of honors courses specified by the Director of General Studies, the program to consist of one or more honors courses in at least two fields which play significant roles in the student's particular program.
3. Honors credit earned for the required undergraduate thesis.
4. A grade-point average of at least 3.00 maintained for the upper-division years.

AFRICAN STUDIES

Committee

Rene Bravmann, Chairman (Art History), James Crutchfield (Economics), Carol Eastman (Anthropology and Linguistics), Michael Hechter (Sociology), Robert Kauffman (Music), Richard Klein (Anthropology-Archaeology), William Kornblum (Sociology), Jacqueline Leiner (Romance Languages and Literature and Comparative Literature), Abraham Maraire (Music), Oliver Osborne (Psychiatric Nursing and Anthropology), Simon Ottenberg (Anthropology), David Spain (Anthropology), Pierre van den Berghe (Sociology), Edgar Winans (Anthropology)

The University offers a series of courses on traditional and modern-day Africa at both the undergraduate and graduate levels. These provide a student with an areal focus to his academic training, offering him the chance to develop an interdisciplinary interest centered on a continent rapidly gaining world importance. For the

graduate student, these courses afford the opportunity to prepare for a professional career in the African field.

Courses specifically devoted to Africa offered at the University include Anthropology 213, 401, 402, 513, 569; Art History 436, 437, 438, 439, 531; Comparative Literature 261, 262, 263, 450; General History (HST) 421, 422; Humanities 103; Music 205, 206, 207, 427, 512; Music Applied 159, 459; Physical Anthropology 281; Political Science 439, 539; Romance Languages and Literature 590; Sociology 459, 569; and other courses offered through the Division of General and Interdisciplinary Studies on a periodic basis. Courses in Swahili and Bantu linguistics are offered in the Department of Anthropology and courses in Arabic are offered in the Department of Near Eastern Languages and Literature. Individual study with members of the Committee on African Studies can be arranged. Undergraduate students with strong interests in Africa may follow an individual major in General Studies.

AMERICAN STUDIES

Committee

Robert Shulman (English) Chairman, Richard Baldwin (English), John Hancock (Urban Planning), Robert Hudspeth (English), Otto Larsen (Sociology), Otis Pease (History), Robert Scholz (History), David Schuman (Political Science), Dennis Strong (Business Administration)

The interdisciplinary study of American civilization is a tradition of long standing at the University of Washington, dating back to the pioneering work of Prof. Vernon L. Parrington. The research and teaching of many members of the faculty, in a variety of departments, represent present-day contributions to the field of American studies. The University is an institutional member of the American Studies Association. A standing Committee on American Studies advises students interested in this field and arranges seminars on topics of special interest to students and faculty.

The College of Arts and Sciences does not offer a degree program in American Studies, but the Committee coordinates the work of students who choose to do an independent American Studies major under the Division of General and Interdisciplinary Studies, or supplement a major in one of the contributing departments. Courses dealing with American civilization include:

Anthropology 333, 334, 335, 416; Art History 483, 486, 487; Drama 476; Economics 200, 201, 260, 330, 442, 462, 463; English 267, 361, 362, 363, 364, 365, 369, 434, 435; Geography 301, 302, 325, 342, 402,

444, 448, 477; History of the Americas 201, 301, 311, 331, 401, 402, 405-406, 411, 412, 431, 432, 443, 444, 451, 452, 453, 454, 455, 458, 459, 461, 462; Music 319, 330, 331; Philosophy 424; Physical Anthropology 284, 285; Political Science 102, 210, 211, 351, 370, 418, 450, 451, 460; Sociology 352, 362, 365, 371, 450, 455, 463; Speech 425, 426; Urban Planning 310.

For advising and further information, interested students should see any member of the American Studies Committee.

AMERICAN INDIAN STUDIES

Director

Frances Svensson
C130 Padelford

Committee

James Nason (Anthropology) and Frances Svensson (Political Science). Co-Chairmen; Marilyn Bentz (Social Work), John Emhoolah, Jr. (Music), Bill Holm (Art), William F. Irmischer (English), Ralph Johnson (Law), George I. Quimby (Anthropology), and Lawney Reyes (Art)

The American Indian Studies Program at the University of Washington was initiated to achieve several goals: an increased relevance of academic education for American Indian students; promotion of interest in American Indian communities and Indian cultures; and an increased awareness and education of non-Indians about these communities and cultures. To achieve these goals, the University offers a series of courses on American Indian culture, history, and contemporary issues, with emphasis on developing knowledge and understanding of American Indian traditional, sociological, philosophical, and aesthetic aspects from the Indian viewpoint.

Courses relative to American Indian Studies include the following: Anthropology 311, 333, 334, 335, 416, 510; Archaeology 304, 472; Art 115; Art History 331, 333, 334, 335; Geography 342; Law 615; Music 205; Physical Anthropology 284, 285; Political Science 210, 211; Psychology 250, 443; Sociology 362; Educational Curriculum and Instruction 464. Other courses are offered through the Division of General and Interdisciplinary Studies on a periodic basis.

BIOLOGY

Committee

Robert Cleland, (Botany), Robert Cahn (Zoology), Neal Groman (Microbiology), Walter Halperin (Botany), Leland Hartwell (Genetics), Stephen Hauschka (Biochemistry), Gordon Orians (Zoology), John Palka

(Zoology), Howard Whisler (Botany), Dennis Willows (Zoology), Elton Young (Biochemistry)

Adviser

Ofelia Svart
240 Johnson Hall

An interdisciplinary curriculum in biology leads to the degree of Bachelor of Science, and supplements the undergraduate curriculums offered by several biology departments. This curriculum, which emphasizes cellular and molecular aspects of biology, consists of the following required courses: Mathematics 124, 125, 126; Chemistry 140, 150, 151, 160, 335H, 336H, 337H, and one year of organic chemistry; Physics 114, 115, 116, or 121, 122, 123; Biology 210, 211, 212; Biochemistry 440, 441, 442; Genetics 451; 15 credits in advanced biology chosen from a broad list of electives. Chemistry 350, 351 or 455, 456, 457, are recommended. Members of the Committee serve as advisers to individual students.

BLACK STUDIES

Executive Committee

David Llorens, Chairman (English), Rodney Bodden (Romance Languages and Literature), Trevor Chandler (Political Science), Robert Garfias (Music), Carver Gayton (Equal Opportunities for Minorities), Guela Johnson (Social Work), John Macklin (Chemistry), Oliver Osborne (Nursing), Charles Watkins (English)

Affiliated Faculty

J. L. Bacharach (History), James Banks (Education), E. A. T. Barth (Sociology), L. R. Beach (Psychology), H. Bosmajian (Speech), Rene Bravmann (Art), Joseph Brazil (Music), L. Canon (Psychology), J. Chambless (Philosophy), Trevor Chandler (Political Science), Carol Eastman (Anthropology), Robert Garfias (Music), Jean Hundley (English), Edward Jones (Arts and Sciences), David Llorens (English), Joyce Mobley (English and Drama), Richard Morrill (Geography), William O. Smith (Music), David H. Spain (Anthropology), Stanley Sue (Psychology), Nathaniel Wagner (Psychology), Charles Watkins (English)

Adviser

Alberta May
C122 Padelford Hall

The college recognizes the importance of widespread understanding of the history and culture of the Black American. It offers to all students the opportunity to understand and appreciate the social, economic, historical, and aesthetic aspects of Afro-American culture. A program in Black Studies is conducted by faculty drawn from several departments of the College.



Bachelor of Arts

Students who wish to organize their undergraduate study in this field may follow an interdisciplinary major in Black Studies leading to the degree of Bachelor of Arts. The major consists of a minimum of 65 credits, distributed as follows: 20 credits of core (lower-division, 100-200 level) Black Studies courses; 15 credits of upper-division (300-400 level) Black Studies courses; 30 credits in a single department relevant to the Black Studies curriculum. (Departments relevant to Black Studies include Anthropology, Art, Communications, Comparative Literature, English, Geography, History, Philosophy, Political Science, Psychology, Sociology, and Speech. All students graduating with a major in Black Studies are expected to fulfill the College's proficiency and distribution requirements.

Courses with content of interest to the student of Afro-American culture and history include Anthropology 111, 212, 213, 401, 402, 456, 457, 458, 464, 466, 467, 468; Art History 230, 331, 432, 436, 437, 438, 439; Communications 328, 329; Comparative Literature 261, 262, 263, 450; Drama 201, 202, 203; Education (EDC&I) 269, 469; English 369; Geography 227, 342; General History (HST) 361, 362, 495; History of the Americas (HSTAA) 443, 444; Humanities 103; Music 319, 331, 427; Philosophy 113; Physical Anthropology 281, 282; Political Science 210, 211, 439; Psychology 250, 260, 443; Social Science 150; Sociology 105, 362, 459, 463; Spanish 311.

CHICANO STUDIES

Executive Committee

Theresa Aragon de Shepro, Chairman (Political Science), Richard Berteaux (Architecture), Robert Garfias (Music), Tomas Ybarra (Romance Languages and Literature)

Affiliated Faculty

Robert Myhr (Political Science), Carl E. Solberg (History), Joseph Sommers (Romance Languages and Literature)

Adviser

Antonio Cardenas
375 Schmitz Hall

The Chicano Studies Program at the University is interdisciplinary and includes a number of courses that inform the majority culture student about the Chicano, and teach the Chicano about his background and culture. However, Chicano Studies cannot be meaningful if it is confined to the time and space of a university campus. Therefore, Chicano Studies also has a barrio

component that provides the student the opportunity for related field experience and study.

Courses in Chicano Studies include English 104, 105; Political Science 210, 211, 499; Spanish 101, 102, 103, 121, 201, 202, 203, 331, 359; Psychology 250, 443. Other courses are offered through the Division of General and Interdisciplinary Studies on a periodic basis.

Individual study with members of the Chicano Studies Committee and affiliated faculty can also be arranged. Students may pursue an individual major or concentration in Chicano Studies by arranging for an individual major in General Studies.

COMPARATIVE LITERATURE

Faculty

Frank J. Warnke (English, Chairman), Sverre Arestad (Scandinavian Languages and Literature), Gerhard Baumgaertel (Germanic Languages and Literature), Ernst Behler (Germanic Languages and Literature), Robert J. Ellrich (Romance Languages and Literature), Edwin Gerow (Asian Languages and Literature), William C. Grummel (Classics), Karl-Ivar Hildeman (Scandinavian Languages and Literature), Antonin Hruby (Germanic Languages and Literature), Frank W. Jones (English), Frank J. Kearful (English), Edith Kern (Romance Languages and Literature), Willis A. Konick (Slavic Languages and Literature), Wolfgang Leiner (Romance Languages and Literature), Michael Loraine (Near Eastern Language and Literature), Pierre A. MacKay (Classics), Richard N. McKinnon (Asian Languages and Literature), Otto Reinert (English), David Thompson (Romance Languages and Literature), William Willeford (English)

Comparative literature is the study of literature in its essential nature, which is independent of ethnic, cultural, and linguistic differences.

The undergraduate program provides, first, a survey of classics which have formed literary taste over the centuries; second, an arrangement of works under three generic aspects: epic, drama, lyric. Both groups of courses stress the constant, unifying factors which underlie national differences and historical change.

In the graduate program, the comparative task proceeds by means of concentration on two or more national literatures, studied in their original languages.

Undergraduate Program

Adviser

Frank J. Warnke
B436 Padelford Hall

GRADUATION REQUIREMENTS

Bachelor of Arts

The minimum course requirement for this degree is 50 credits. The following courses must be taken: Classics 210 or any upper-level course in Classics; Comparative Literature 300, 301, 302; and at least one course in a literature other than English, studied in the original tongue. The remaining credits are earned (with few exceptions) in 300- and 400-level literature courses chosen, in consultation with the adviser, from among the offerings of Comparative Literature and the several departments. Departmental courses in foreign literature in English translation are listed under Asian Languages and Literature, Classics, English, Germanic Languages and Literature, Near Eastern Languages and Literature, Romance Languages and Literature, Scandinavian Languages and Literature, and Slavic Languages and Literature.

Graduate Program

The graduate program in Comparative Literature is described in the section on *Interdisciplinary Graduate Degree Programs* in this catalog.

DANCE

A series of dance techniques courses at the beginning, intermediate, and advanced levels, including Pointe Technique, Partnering Techniques, Men's Special Techniques, Period and Character Dance, the Structure of Music in Relation to Dance, and courses in Contemporary Dance, are offered by the faculty of the School of Drama and the School of Physical and Health Education.

Courses may be chosen by students according to interest and personal goals. A unified series of courses may be elected by students who are interested in serious study of the art of dance for personal and/or professional goals; some single courses in the series may be elected in pursuit of recreational activity. Students in dance classes may participate in lecture-demonstrations and performances of opera and musical comedy produced by the schools of Drama and Music, and in programs of folk dance.

Inquiries concerning the program should be addressed to Ruthanna Boris, Associate Professor and Director of Dance, School of Drama, or Joan Skinner, Associate Professor of Dance, School of Physical and Health Education.

GEOPHYSICS

Chairman

Stewart W. Smith

204 Atmospheric Sciences-Geophysics Building

Associate Chairman

Kenneth C. Clark

219 Physics Building

Graduate Program Adviser

Charles F. Raymond

715 Atmospheric Sciences-Geophysics Building

Alternate Graduate Program Adviser

Ronald T. Merrill

208 Marine Sciences Building

Professors

Robert C. Bostrom (Geological Sciences), Joost A. Businger (Atmospheric Sciences), Kenneth C. Clark (Physics), Arthur W. Fairhall (Chemistry), Paul W. Hodge (Astronomy), Stewart W. Smith, H. Myron Swarm (Electrical Engineering), Norbert Untersteiner (Atmospheric Sciences)

Associate Professors

Robert S. Charlson (Civil Engineering), Nikolas I. Christensen (Geological Sciences), William O. Criminale (Oceanography), Edward R. LaChapelle, Conway B. Leovy (Atmospheric Sciences), J. Dungan Smith (Oceanography)

Assistant Professors

Lee C. Bennett, Jr. (Oceanography), James D. Blacic, John R. Booker, Robert S. Crosson, Ward J. Helms (Electrical Engineering), Clive R. B. Lister, Ronald T. Merrill, George K. Parks, Charles F. Raymond Raymond

Visiting Professor

Franklin I. Roach

Visiting Associate Professors

William F. Budd, Harold B. Liemohn

Research Associate Professor

Victor Vali

Senior Research Associates

Robert E. Burns (Oceanography), Halstead Harrison, William Harrison, Gary Maykut (Atmospheric Sciences)

Research Associates

Rainer Kind, Brian T. R. Lewis, George H. Shaw

Adjunct Faculty

Professors: Arnold B. Arons (Physics), Howard A. Coombs (Geological Sciences), Joe S. Creager (Oceanography), Robert G. Fleagle (Atmospheric Sciences), Jere J. Lord (Physics), A. Lincoln Washburn (Quaternary Studies)

Assistant Professor: Roger J. Evans (Civil Engineering)

The geophysics program at the University is administered by an interdisciplinary faculty who cover a variety



of interdisciplinary areas in geophysics. Thirty-five professors participate in the program, and its administration is handled by a full-time chairman and an executive committee. Presently the faculty members in Geophysics are drawn from the Departments of Astronomy, Atmospheric Sciences, Chemistry, Civil Engineering, Electrical Engineering, Geological Sciences, Oceanography, and Physics, with some faculty carrying full-time affiliation with Geophysics. Graduate students work toward either or both the Master of Science and Doctor of Philosophy degrees.

Geophysics is concerned with the nature and behavior of the earth and its environment. It rests directly on physical laws, and its study uses many different mathematical and observational methods. It seeks to apply these laws and methods to the complex phenomena and enormous energy sources of the geophysical system. In these investigations a mixture of experimental and theoretical approaches usually is necessary. Although it is anticipated that a student entering the field of geophysics may come from one of various undergraduate major fields, his minimum preparation for embarking on a graduate program in geophysics should include mathematics through differential equations, mechanics, modern physics, electricity and magnetism at the introductory level, and general chemistry. It is desirable that the student have some laboratory experience in physics or chemistry.

ADMISSION

The minimum undergraduate preparation for embarking on the graduate program in geophysics should include the following courses or their equivalents:

Mathematics 438 (Principles of Differential Equations, 3 credits); Physics 221, 222, 223 (Quantum, Statistical, and Elementary Mathematical Physics, 9 credits); Physics 231, 232 (Electric Circuits Laboratory, 6 credits); Physics 327 (Introduction to Nuclear Physics, 3 credits); Physics 321, 322, 323 (Electromagnetism, 9 credits); Physics 331 (Optics Laboratory, 3 credits); Chemistry 140, 150, 160 (General Chemistry, 12 credits); Chemistry 151 (General Chemistry Laboratory, 2 credits); Chemistry 170 (Qualitative Analysis, 3 credits).

Depending upon a student's proposed specialization within the geophysics program, competence in the material of additional undergraduate courses will often be required.

PROGRAMS OF STUDY

A student who is suitably prepared is expected to begin a program of studies that will lead him to a general

knowledge of geophysics and a more detailed knowledge of one of the following areas of specialization:

Solid Earth Geophysics: those areas dealing with the earth's internal composition, structure, and dynamics, including seismology, tectonophysics, geothermal studies, and high pressure properties of materials.

Geomagnetism and Aeronomy: those areas dealing with the origin and behavior of the earth's magnetic field, rock magnetism, investigations of the upper atmosphere, the ionosphere, and the magnetosphere.

Geophysical Fluid Mechanics: those areas dealing with large scale fluid motion in the atmosphere, ocean, and earth's interior.

Glaciology: those areas dealing with the dynamics of glaciers, arctic sea ice, and snow cover geophysics.

In order to accomplish these ends, all students will be expected to take the following introductory sequence: Geophysics 400, 401, and 402. This series introduces the student to methods in geophysics and to assorted geophysical problems in the atmosphere, oceans, and solid earth. In addition, all students are expected to select a minimum of 9 credits in geophysics courses in the 500 series for a master's degree and a minimum of 15 credits in geophysics courses in the 500 series for a doctoral degree. All course requirements are subject to fulfillment through prior studies.

In the early part of his second year the student will take a qualifying examination that is designed to test his mastery of the fundamentals of physical sciences as they apply to geophysical phenomena and to assess his general knowledge of geophysics as summarized in the course sequence, Introduction to Geophysics I, II, III. An important part of his general education in geophysics is provided through participation in the regular interdisciplinary program of seminars in geophysics. Those who pass the examination with distinction may proceed with a course of study leading to the M.S. or Ph.D. degree in the field of geophysics.

The student will be assigned a Supervisory Committee that will assist in the planning of the remainder of his program, which may include additional advanced courses in the student's area of specialization, and the selection of a suitable research topic. Current areas of research that can involve geophysics students include: radiophysics of the ionosphere, magnetospheric physics, atmospheric collisional excitation, aurora and airglow, isotope geophysics, geochemistry, laser probing of atmospheric motions, fluid mechanics of air and ocean, glaciology, elasticity and physical properties of rocks and minerals, seismic wave propagation, earthquake

source mechanisms, structure of the crust and upper mantle, suboceanic heat flow, geomagnetism, paleomagnetism, tectonophysics, marine geophysics, and internal composition of the earth.

Master of Science

Although the geophysics program is designed primarily for study toward the Ph.D. degree, a student may elect to take a program leading to the M.S. degree. The principal requirements for this degree are Geophysics 400, 401, 402, and 9 credits in geophysics courses in the 500 series and an acceptable master's thesis.

The thesis must represent a problem of substantial scientific importance and demonstrate the student's ability to use research methods. Prospective candidates for the degree of Master of Science must pass the qualifying examination.

Doctor of Philosophy

A student who passes the qualifying examination with distinction or has shown outstanding ability while fulfilling the requirements for the Master of Science degree may become a candidate for the Doctor of Philosophy degree. In addition to Geophysics 400, 401, 402, and 15 credits in geophysics courses in the 500 series, students are expected to obtain a broad background in geophysics and detailed knowledge of their research area. Language requirements and detailed course programs will be decided on by the student and his Supervisory Committee.

As soon as possible after the completion of his second year of residence the student will be expected to take the General Examination. This examination is oral and is intended to test the student's mastery of the foundations of geophysics and his understanding of topics within his field of specialization. A student who fails the General Examination may, upon the recommendation of his Supervisory Committee, be allowed to repeat the examination within one calendar year.

Students who pass the General Examination will become candidates for the Ph.D. degree. Normally, students will have begun a program of research before taking the General Examination. The dissertation is an important part of the candidate's program and must present an original study of a problem of substantial scientific importance.

The Final Examination, conducted following an oral presentation of the dissertation, will be devoted mainly to the subject area of the dissertation.

LATIN AMERICAN STUDIES

Committee

Joseph Sommers (Romance Languages and Literature),

Chairman, Rodney Bodden (Romance Languages and Literature), Robert Greengo (Anthropology), Alex Krieger (Anthropology), Robert O. Myhr (Political Science), Michael G. Owen (Anthropology), Carl Solberg (History), Joan Ullman (History), Anibal Vargas-Barón (Romance Languages and Literature)

Adviser

Robert O. Myhr
310 Engineering Annex

The interdisciplinary undergraduate program in Latin American Studies, established at the University in 1941, has grown substantially in recent years as new faculty and specialties have been added. The program is intended to provide students with a broad understanding of the history, politics, and culture of Latin America from pre-Columbian and Peninsular origins to the present.

The major includes 48 to 50 credits of required courses as follows (see *Description of Courses* section): Anthropology 322 or 418 plus one elective; History of the Americas 381 and 382; Political Science 323 and 342; 9 credits in Spanish-American or Luso-Brazilian literature; General Studies 492 and 493; and one elective course. In addition, each undergraduate major will be expected to demonstrate basic language skills. Two options are open: (1) one year of Portuguese and 302 level in Spanish, or (2) two years of Portuguese and one year of Spanish. Except in unusual cases, for most students approximately one-half of the course credits needed to acquire these language skills will be satisfied prior to entrance to the University. Every effort will be made to speed up acquisition of language competence.

FOREIGN AREA STUDIES: EAST ASIA, INNER ASIA, RUSSIA AND EAST EUROPE, AND SOUTH ASIA

Acting Director

Donald C. Hellmann
406 Thomson Hall

Associate Director, East and Inner Asia Program

Donald C. Hellmann
414 Thomson Hall

Associate Director, Russia and East Europe Programs

W. A. Douglas Jackson
502 Thomson Hall

Associate Director, South Asia Program

Edwin M. Gerow
150 Lewis Hall Annex

**EAST ASIA STUDIES GROUP****Faculty**

George M. Beckmann, John A. Brim, Robert J. C. Butow, Kuei-sheng Chang, Steven N. S. Cheung, Ilse Cirtautas, Jack L. Dull, Robert A. Garfias, Susan Hanley, Donald C. Hellmann, Dan F. Henderson, Noburu Hiraga, Dau-lin Hsu, George H. Kakiuchi, Robert Kauffman, Fred Lukoff, Feng-hwa Mah, Richard McKinnon, Roy A. Miller, Tamako Niwa, James B. Palais, Kenneth B. Pyle, Millard B. Rogers, Paul L-M Serruys, Warren L. Shattuck, Vincent Y. C. Shih, Doo Soo Suh, Ted T. Takaya, George E. Taylor, James R. Townsend, Glenn T. Webb, Turrell V. Wylie, Kozo Yamamura, Isabella Yen

RUSSIA AND EAST EUROPE STUDIES GROUP**Faculty**

James E. Augerot, Imre Boba, Herbert S. Coats, Herbert J. Ellison, Paul V. Gribanovsky, Roger N. Hagglund, Jack V. Haney, W. A. Douglas Jackson, Willis A. Konick, Karl Kramer, Lyman H. Legters, Lew R. Micklesen, John S. Reshetar, Jr., Jacek I. Romanowski, Barry Scherr, Peter F. Sugar, E. Harold Swayze, Marc M. Szeftel, Judith A. Thornton, Donald W. Treadgold, Joseph Velikonja

SOUTH ASIA STUDIES GROUP**Faculty**

Paul R. Brass, Frank F. Conlon, Edwin M. Gerow, Morris D. Morris, Karl H. Potter, Harold F. Schiffman, Michael Shapiro

FOREIGN AREA PROGRAMS OF STUDY

Programs in East Asia (China, Japan, and Korea), Russia, East Europe, and South Asia Foreign Area Studies leading to the Bachelor of Arts and Master of Arts degrees are offered and supervised by interdisciplinary groups in the Institute for Comparative and Foreign Area Studies with the cooperation of the various departments. Each program is designed not only to meet general requirements but also to conform to the peculiar needs and problems of a particular area.

The Foreign Area Programs, leading to the Master of Arts degree, are described in the section on Interdisciplinary Graduate Degree Programs in this catalog.

Undergraduate Programs**Advisers****East Asia Programs and Honors**

Ford R. Crull

403 Thomson Hall

Donald C. Hellmann

414 Thomson Hall

Russia and East Europe Programs and Honors

W. A. Douglas Jackson

502 Thomson Hall

South Asia Program and Honors

Edwin M. Gerow

150 Lewis Hall Annex

The Bachelor of Arts programs for China, Japan, Korea, Russia, East Europe, and South Asia are basically similar in that they require language training, the study of history, course work in the disciplines as related to the area studied, and an Undergraduate Colloquium. Students who plan on graduate study in one of the discipline departments are encouraged to take courses in that discipline to provide necessary background for graduate admission. A double major can be arranged for students wishing to fulfill both the requirements of the Studies Group offering the Institute B.A. degree and those imposed by one of the discipline departments for its B.A. degree. Institute undergraduates may also earn a B.A. degree with college honors by completing requirements of the college honors program.

For courses offered in support of the various programs, refer to the Institute for Comparative and Foreign Area Studies under the *Description of Courses* section.

Institute undergraduate programs are primarily designed for those who need a Bachelor of Arts degree as preparation for graduate work in a discipline department and for those who wish a terminal Bachelor of Arts degree as preparation for work in business, government, journalism, or similar career activity. Major and minor academic fields are available to students in the College of Education as preparation for secondary school teaching.

Honors Programs

Members of the College of Arts and Sciences Honors Program who fulfill the requirements of that program during the freshman and sophomore years, in addition to the Institute's departmental honors requirements, receive a bachelor's degree "With College Honors." Superior students who are not members of the College Honors Program may participate in the departmental honors curriculum and receive a bachelor's degree "With Distinction." Majors are eligible to participate in the honors program at the beginning of their junior year, but no later than the second quarter thereof.

Requirements: Students are expected to arrange, during their freshman and sophomore years, approximately one-half their schedules in honors courses in a variety of academic disciplines and to maintain a minimum overall grade-point average of 3.00.

Students who are selected as candidates for departmental honors are expected to (1) continue to maintain a

minimum overall grade-point average of 3.00; (2) complete selected courses from the major program with a grade-point average of 3.00 (in addition, honors students may be permitted to take selected graduate courses for undergraduate credit); (3) take, in the junior year, a minimum of 15 credits in selected 400-level courses in Social Science and Humanities disciplines as required by the major program; (4) satisfy all other requirements for the major program; and (5) complete a senior year interdisciplinary independent study assignment (as part of work done on the area being studied in the Undergraduate Colloquium).

RELIGION

The College does not offer an organized curriculum in the study of religion, although religion as an important aspect of human experience is examined in courses offered by several departments. Students following undergraduate programs in the departments of the College or in General Studies may elect those which provide opportunities for historical and comparative study of religious thought and expression. Such courses include Ancient and Medieval History 441; Anthropology 436; Aramaic 401; Classics 430; East Asia 462, 463; Hebrew 201, 202, 203, 401, 402, 403, 421, 422, 423, 431; English 390; History of the Americas 405-406; Inner Asia 464; Modern European History 401, 402; Near East 210, 220, 420; Philosophy 267, 321, 412, 415, 416, 467, 469; Scandinavian 230; Sociology 457; and South Asia 291, 472, 473.

SOCIAL WELFARE

Committee

William Berleman, Chairman (Social Work), Helen Bee (Psychology), Robert Bish (Economics), William Catton (Sociology), Moya Duplica (Social Work), Rino Patti (Social Work), David Spain (Anthropology)

Faculty of the School of Social Work cooperate with the faculty of the College of Arts and Sciences in offering an interdepartmental organized major program for students whose field of major interest is that of social welfare, or who anticipate graduate study in the School of Social Work. The educational objectives of this curriculum are to integrate selected courses in psychology, sociology, anthropology, and economics in order to achieve a broader and deeper understanding of human nature and human needs; to study, through philosophy, suggestions made by the most profound thinkers in our cultural heritage, concerning social ideals; to become aware, through courses in labor economics, abnormal psychology, social disorganization,

the family, and race relations, of the problems shared by members of modern society; and, finally, through courses in social work, including relevant field experience and preparation of an undergraduate thesis, to examine critically the systems and structures of social welfare institutions and the manner in which these institutions meet the needs of society. The program leads to a bachelor's degree in the College of Arts and Sciences, through the Division of General and Interdisciplinary Studies.

Freshman and sophomores following their major program are advised in the College Advisory Office, B10 Padelford Hall. Juniors and seniors are advised in the School of Social Work, Eagleson Hall.

SOCIETY AND JUSTICE

Executive Committee

Ezra Stotland, Chairman (Psychology), Jack Holl (History), Jennifer James (Psychiatry), John Junker (Law), Eugene Mochizuki (Social Work), Stuart Scheingold (Political Science), Clarence Schrag (Sociology), Frederick Siegler (Philosophy)

Adviser

Ezra Stotland

B103 Padelford Hall

This program, leading to the Bachelor of Arts degree with a major in Society and Justice, has the goal of providing students with an opportunity to develop a broad liberal arts, research-oriented approach to the system of justice in our society.

The program is basically interdepartmental, drawing on courses in anthropology, English, history, law, philosophy, political science, psychology, psychiatry, social work, and sociology. As background, the student selects from lists of relevant courses in these departments. The student also takes courses that focus more specifically on aspects of the justice system. To develop his skills in research, the student either takes appropriate research courses in the humanities or a sequence of research courses in social behavioral sciences involving field research. To observe the system of justice directly, the student takes courses involving participant observation in relevant agencies. To relate various aspects of the system, the student participates in special interdepartmental seminars.

Those who complete the program might go on to receive vocational and professional education and training in a variety of fields such as law, social work, law enforcement, criminology, etc., as well as enter directly into the justice system, or into related private groups.



DEPARTMENTAL PROGRAMS

ANTHROPOLOGY

Chairman

Edgar V. Winans
345 Savery Hall

Professors

Alex D. Krieger, Marshall T. Newman, Simon Ottenberg, George I. Quimby, Kenneth E. Read, Daris R. Swindler, James B. Watson, Edgar V. Winans

Associate Professors

Vern Carroll, Robert C. Dunnell, Robert Garfias, Robert E. Greengo, Charles F. Keyes, Richard G. Klein, Peter Kunstadter, Lewis L. Langness

Assistant Professors

John R. Atkins, John A. Brim, Carol M. Eastman, Michael D. Lieber, James D. Nason, Michael G. Owen, David H. Spain

Lecturers

Madeleine M. Leininger, Oliver H. Osborne

Adjunct Assistant Professor

Harold F. Schiffman

Adjunct Lecturer

Bill Holm

Anthropology—the “study of man and his works”—ranges over a wide and diverse field of inquiry, bridging the biological and social sciences as well as the humanities. It seeks to understand the observable differences and similarities in physical form, in social behavior, and in customs and beliefs found among the peoples of the world, past and present. Through systematic comparison and historical investigation, it attempts to substitute a body of objective, testable knowledge for the folklore and dogma that surround our conceptions of “human nature.” These aims require the cooperation of many specialists. The field of anthropology includes a number of subfields. The programs, faculty, and curriculum of the Department fall into three principal subfields: (1) archaeology, (2) physical anthropology, and (3) sociocultural anthropology.

Archaeology is the reconstruction of past cultures through the study of surviving material remains, and the tracing of man’s cultural evolution during the vast periods preceding written documents.

Physical anthropology covers the study of man as a biological organism, including the evolution of man, racial differentiation, the biological significance of race, population genetics, and the biological basis of human behavior.

Sociocultural anthropology includes ethnology, social anthropology, and anthropological linguistics. Ethnol-

ogy is the study of the cultures of living peoples, their institutions, customs, arts, beliefs, and traditions; their geographic distribution, and their historical relationships. Social anthropology (sometimes included under ethnology) is interested in defining types of social and cultural systems and in formulating valid generalizations about human behavior. Anthropological linguistics is the scientific study of languages, including the analysis of the sound systems, grammar, and vocabulary of spoken languages, the historical relationships between languages, and the relation of language to other aspects of culture. (The Department of Anthropology and the Department of Linguistics offer a joint program in this field. For the full linguistic curriculum, see “Linguistics,” *College of Arts and Sciences* section.)

In the interests of a general liberal education, undergraduate majors are expected to acquire a broad understanding of the three principal subfields mentioned above and the relationships between them. The student is thus given a comparative view of human variation in time and space. He sees the wide range of cultural solutions men have devised to meet the problems posed by the physical environment and by man’s biological, psychological, and social nature. He also becomes aware of the fundamental similarities shared by these apparently diverse physical and cultural forms.

The study of anthropology, therefore, fosters a better understanding of the world in which we live and a critical awareness of our own culture. A second aim of the undergraduate program is to provide a theoretical and factual background for those who wish to pursue a professional career in anthropology through graduate study.

At the graduate level, students are expected to acquire the special knowledge and competencies of their elected subfield of specialization. For a full professional career, involving teaching and research at the university level, the Ph.D. degree is a necessary qualification. At this professional level there are many opportunities for the application and advancement of theoretical anthropology in teaching and research, and for its practical application in industry and government.

The Department of Anthropology offers courses leading to the degrees of Bachelor of Arts, Master of Arts, and Doctor of Philosophy. In addition, the Department offers major and minor academic fields for students in the College of Education; see *College of Education* section.

Undergraduate Programs

Advisers

David H. Spain, Richard G. Klein
327 Savery Hall

GRADUATION REQUIREMENTS

Bachelor of Arts

For the Bachelor of Arts degree in this curriculum, 50 credits in anthropology are required, including Physical Anthropology 201, Anthropology 202, and Archaeology 205. At least 30 of the 50 credits must be at the 400 level. A major will typically take one or more of the undergraduate seminars and perform some individual research. Majors must also complete a five-credit course in statistics. The Department does not encourage its majors to take more than the 50 required credits in anthropology, but instead encourages them to work in related fields as much as possible.

A 2.50 grade-point average in anthropology is required in order to continue major studies in the Department. If graduate work is contemplated, electives should include one foreign language.

HONORS IN ANTHROPOLOGY

Advisers

David H. Spain, Richard G. Klein
327 Savery Hall

Members of the College of Arts and Sciences Honors Program who wish to qualify for a bachelor's degree "With College Honors in Anthropology" must fulfill the requirements of that program during the freshman and sophomore years, in addition to the departmental honors requirements outlined below. With the approval of the departmental honors adviser, superior students who are not members of the College Honors Program may participate in the departmental honors curriculum and receive a bachelor's degree "With Distinction in Anthropology." These latter students may be selected from among those anthropology majors who have demonstrated, during their junior year, superior abilities in the field of anthropology. They will be required to meet the same grade requirements for their junior and senior years as those set forth below for honors students and, in addition to fulfilling the course requirements for undergraduate majors in anthropology, must be prepared to do such additional work as the honors adviser will require.

Students desiring to become candidates for honors in anthropology should normally elect to major in anthropology prior to the beginning of their junior year and must fulfill the following departmental requirements:

- (1) Complete a minimum of 50 credits in anthropology, including the courses required of all undergraduate majors.
- (2) Maintain a grade-point average of 3.50 in all anthropology courses, and 3.00 in all other courses taken during their junior and senior years.

(3) Register in the special honors quiz sections in Physical Anthropology 201, Anthropology 202, and Archaeology 205. Those students who have not fulfilled these lower-division requirements, on electing their major in anthropology, may be required to pass an advanced credit examination, or do such additional work as the departmental honors adviser may recommend.

(4) Register for 3 credits in Anthropology 499 (Undergraduate Research) in each quarter of their junior and senior years. During the junior year, this work will be directed by a designated member of the faculty and will be equivalent to an undergraduate proseminar. The work of the senior year will be carried out under the direction and supervision of a thesis committee appointed by the Department; all honors students will be required to submit a satisfactory senior thesis.

Graduate Programs

Graduate Program Adviser

Kenneth E. Read
345C Savery Hall

All applications for admission to the graduate program in anthropology are considered by the Department as well as by the Graduate School of the University. In addition to the completed application form and the transcripts of record required by the Office of Graduate Admissions and which should be sent directly to that Office, the Department requires that each applicant complete a supplementary information form and secure recommendations from three faculty members under whom he has studied. The supplementary information form and the recommendations should be mailed directly to the Department of Anthropology. All materials requested by the Office of Graduate Admissions and the Department must be on file *February 1* for admission to the following Autumn Quarter. New students will normally be admitted only to the Autumn Quarter of an academic year. In considering applications for admission, the Department gives greater weight to a student's promise for a creative professional career than to previous background in anthropology. An undergraduate major in anthropology is not, therefore, required for admission to the graduate program. Students lacking an adequate background in the subfield in which they elect to specialize will be required to remedy their deficiencies in accordance with departmental requirements and recommendations of their advisers.

Students who intend to work toward advanced degrees must meet the requirements of the Graduate School as outlined in the *Graduate Study* section.

The following is a brief summary of departmental requirements. A more complete description of the grad-



uate program and requirements, set forth in a departmental brochure, may be obtained by writing to the Graduate Program Adviser, Department of Anthropology.

Graduate students are permitted to specialize in one of the three principal subfields of anthropology from the beginning of their graduate studies. Each of these subfields—archaeology, physical anthropology, and sociocultural anthropology—has its own program and requirements within the general departmental requirements for advanced degrees.

The student selects the subfield, and the particular problems within it, upon which he wishes to concentrate. Under the guidance of a faculty Supervisory Committee selected from the elected subfield, the student's program is shaped to his individual needs.

A student may, if he desires, elect a program that cuts across the boundaries of two or more subfields, in which case his Supervisory Committee will include representatives from each of the subfields. Graduate students are advised to take supportive work in other disciplines when this seems necessary or desirable.

The Department offers a joint program with the faculty members associated with the Institute for Comparative and Foreign Area Studies for students who wish to undertake, as an additional field of concentration, area studies in the following regions: China, South Asia, Southeast Asia. In such cases the additional field will consist of a combination of language, history, and social science courses in the selected area as planned by a joint advisory committee comprised of faculty members from the Department and the Institute.

The Department also participates with the Departments of Art, Linguistics, Music, Political Science, and Sociology in the interdisciplinary African Studies, American Indian Studies, and Black Studies programs.

Master of Arts

The Department offers a thesis and a nonthesis program leading to the Master of Arts degree. In both, the student must complete an approved program of courses and readings, demonstrate a reading knowledge of one foreign language approved by his Supervisory Committee, and fulfill the Graduate School requirements for residence and course credits. In the thesis program, the student must present an acceptable thesis which demonstrates his ability to pursue independent research and to present the results in a clear and systematic manner. Upon acceptance of the thesis the student must pass an oral examination covering the thesis and his subfield of specialization. In the nonthesis program, the student must pass a written comprehensive examination in his

subfield of specialization, and must demonstrate competence in carrying out independent research, and must submit a written report embodying the results of his research. In both the thesis and nonthesis programs the required research must be approved in advance by the Supervisory Committee.

The departmental faculty regards the master's degree as a stage in the progress toward the doctoral degree rather than as a terminal degree, and the graduate program is primarily designed for students who intend to continue through the doctoral requirements.

Doctor of Philosophy

For the degree of Doctor of Philosophy, students must:

- (1) Present a master's degree in anthropology or its equivalent.
- (2) Pass an approved course in statistics with a grade of B or better or demonstrate competence in formal analysis, quantitative analysis, or computer programming, as determined by the Supervisory Committee.
- (3) Satisfactorily complete any course and/or reading programs recommended by the Supervisory Committee in the field of specialization or in a supporting field.
- (4) Demonstrate reading proficiency in one foreign language, except that students specializing in sociocultural anthropology are required to obtain a knowledge of the language used in the area where they intend to do doctoral field research and, if it is not a written, scholarly language, this may constitute a second foreign language requirement.
- (5) Be formally admitted to candidacy for the doctorate by creditably passing the General Examinations, consisting of a written comprehensive examination and an oral examination, covering the student's subfield of specialization and such topics as the Supervisory Committee considers relevant to that field. The student must also complete any additional assignment required by his subfield of specialization as part of the General Examinations.
- (6) Demonstrate competence in field work or laboratory work, depending on the subfield of specialization.
- (7) Present an acceptable dissertation.
- (8) Pass the oral Final Examination devoted to the dissertation and general field of which it is a part.

The Ph.D. degree program usually requires three years beyond the master's degree or its equivalent.

Minor in Anthropology

The requirements for a minor in anthropology for the master's degree are 18 credits in courses numbered 400

or above, to be chosen in consultation with the anthropology adviser. The course of study pursued by the student must be directed toward the attainment of a minimal degree of competence in one of the three principal subfields of anthropology: archaeology, physical anthropology, or sociocultural anthropology.

The requirements for a minor in anthropology for the doctoral degree include, in addition to the requirements for the master's degree, a program of study worked out in consultation with the anthropology adviser resulting in the acquisition of an areal or topical specialization in one of the three subfields of anthropology. Thus, the Ph.D. graduate student who minors in anthropology will be expected to attain a minimal competence in one of the subfields of anthropology and in a topical or areal specialization within that subfield.

ART

Director

Spencer A. Moseley
102 Art Building

Associate Director

John W. Erickson
102 Art Building

Professors

Glen E. Alps, Frederick N. Anderson, Wendell P. Brazeau, Everett G. DuPen, Hope L. Foote (emeritus), Boyer Gonzales, Friederich Grossmann, Raymond L. Hill (emeritus), William J. Hixson, Pauline Johnson, Jacob Lawrence, Alden C. Mason, Spencer A. Moseley, Ruth E. Penington (emeritus), Charles W. Smith, Robert Sperry, Jack Stoops, George Tsutakawa

Associate Professors

Ronald Carraher, Francis Celentano, Richard Dahn, Michael D. Dailey, John W. Erickson, Steven D. Fuller, C. Louis Hafermehl, Warren T. Hill, Paul Jenkins, Robert Jones, Hazel Koenig, Howard Kottler, Norman Lundin, John Marshall, Viola Patterson (emeritus), Eugene C. Pizzuto, Richard Proctor, Peter Raven, Millard Rogers, Ramona Solberg, Glenn T. Webb, Valentine S. Welman

Assistant Professors

Patricia W. Bauer, Rene Bravmann, Richard Kehl, Martha Kingsbury, Jennifer Lew, Gerald McDowell, Hal Opperman, Kenneth J. Pawula, Edward L. Praczkowski, William Ritchie, Michael C. Spafford, Norman Taylor, Robert D. Wilson

Instructor

Douglas Wadden

Lecturers

Irwin Caplan, Frank Del Giudice, Stephen Dunthorne, Toshi Fujikado, Bill Holm, Ann O'Keefe, Theodore L. Rand, T. Gervais Reed, Donald F. Riecks

The School of Art serves a dual role within the educational structure of the University of Washington. It is both a professional school and an academic department. As a professional school it trains students for active careers in the graphic and plastic arts; as a school of the College of Arts and Sciences it offers studio and lecture courses which are open to all students, as well as a major in art within the College's regular Bachelor of Arts program. All of its course offerings and its curriculum requirements are based on the underlying philosophy that an awareness and understanding of the visual arts are necessary to a liberal education, and that liberal education is necessary to the training of a professional artist.

The School of Art offers courses leading to the degrees of Bachelor of Arts, Bachelor of Fine Arts, Master of Fine Arts, Master of Arts for Teachers, and Master of Arts in the field of art history.

The School reserves the right to retain student work for temporary or permanent exhibition.

Undergraduate Programs

Advisers

Malinda Dreyer, Stephen Dunthorne
104 Art Building

For undergraduate students, the School provides curricula in general art, art education, and art history which lead to a Bachelor of Arts degree, and curricula in ceramic art, graphic design, industrial design, interior design, metal design, painting, printmaking, and sculpture which lead to a Bachelor of Fine Arts degree. The School also offers a major academic field (for elementary education majors) in the College of Education; see *College of Education* section of this catalog.

Advanced standing in the School of Art is granted only on presentation of credentials from and samples of work done in art schools or university art departments whose standards are recognized by the School of Art.

Transfer students are required to submit slides and/or photographs of studio work to the School of Art for placement evaluation. The slides should reach the Art Advisory Office at least a week before the transfer student's appointment with an art adviser.

All transfer students entering the School of Art are required to have a minimum cumulative grade point of 2.50. Students not meeting this requirement may peti-



tion for a review of their work, which, if approved, would permit the waiver of this rule in exceptional cases.

The work and record of accomplishment in the freshman and sophomore years of art majors will be reviewed at the end of the sophomore year to determine continuation in the program.

All majors in the School of Art must take the following art courses in the first year: Art 105, 106, 107 (Drawing), 109, 110 (Design), and 129 (Appreciation of Design).

Prerequisites for all art courses must be strictly adhered to and in no case will auditors be allowed to take studio courses.

GRADUATION REQUIREMENTS

Bachelor of Arts

Requirements for students seeking this degree are listed below. Students following these curricula will be required to complete a minimum of 180 credits, combining stated College of Arts and Sciences requirements with requirements in the major.

CURRICULUM FOR THE GENERAL MAJOR

This curriculum provides some concentration in art, but allows a wide range of electives both in art and in other fields of study. The requirements are 70 credits, composed of Art 105, 106, 107, 109, 110, 129 (the first-year program); Art History 201, 202, 203 and 42 credits chosen from the following optional fields so that one option includes no more than 15 credits, and the others no more than 9 credits each: Art 301, 302, 304, 305; all undergraduate art history courses except Art History 201, 202, 203; Art 201, 202, 203, 353; Art 250, 253, 255, 340; Art 265 (9 credits), 268, 325 (6 credits); Art 205; Art 357, 358, 359, 457, 458, 459; Art 256, 257 (6 credits), 259, 307 (6 credits), 360 (6 credits); Art 350, 351 (6 credits), 450; Art 272 (6 credits), 274, 332.

CURRICULUM IN ART EDUCATION

Students may follow one of three options: Elementary specialization, secondary emphasis, or a combination of both. The professional education requirements, as described in the *College of Education* section of this catalog, must be fulfilled for certification to teach in the state of Washington.

The requirements are 70 credits, composed of Art 105, 106, 107, 109, 110, 129 (first-year program); Art History 201, 202, 203; Art 210, 211, 212; 3 credits from Art 250, 251, 252, 253, 254, 255; 256, 259; Art 305 or 201; 3 credits from Art 301, 302, 303, 304; 3 credits from Art 272, 350, 358; 15 credits of approved electives*. Educational Curriculum and Instruction

(EDC&I) 340 is required for elementary specialization, EDC&I 341 for secondary emphasis, EDC&I 340 and EDC&I 341 for the combination program.

CURRICULUM IN ART HISTORY

The requirements are 22 credits composed of Art 105, 106, 107, 109, 110, 129 (first-year program), and Art History 201; plus 44 credits to be selected from offerings in the history, theory, and criticism of art, the history of architecture, and classical archaeology. The student should also elect courses in related subjects in his major field.

Students who plan to undertake graduate work in art history must include in their program for the Bachelor of Arts degree the following: Art History 301, 305, 306, 307, 308, 331. In addition, a reading knowledge of French or German is essential. Those planning to do graduate work in oriental art should begin work in an oriental language as well.

Bachelor of Fine Arts

The requirements for this degree are listed below. Professional curricula in the following fields are offered for students who wish a greater concentration in art than is provided in the general major. Students following these curricula will be required to complete a minimum of 225 credits, combining stated College of Arts and Sciences requirements with requirements in the major.

CURRICULUM IN CERAMIC ART

The requirements are 115 credits composed of Art 105, 106, 107, 109, 110, 129 (first-year program); Art History 201, 202, 203 and 6 elective credits in art history; Art 201, 202, 203, 353 (15 credits), 485 (15 credits); 42 elective credits in art.

CURRICULUM IN GRAPHIC DESIGN

The requirements are 129 credits composed of Art 105, 106, 107, 109, 110, 129 (first-year program); Art History 201, 202, 203; Art 205, 206, 313, 314, 366, 367, 368, 410, 466, 467, 468, 479, 480, 495 (15 credits); and 33 elective credits in art.

CURRICULUM IN INDUSTRIAL DESIGN

The requirements are 142 credits composed of 81 credits in art and art history, 18 credits in architecture, and 43 other credits. The following courses are required: Art 105, 106, 107, 109, 110, 129 (first-year program); Art History 201, 202, 203; Art 316, 317, 318, 445, 446, 447; Art 201, 205, 253, 272, 282, 313,

*An additional 15 credits of approved art electives will constitute a combined teaching major/minor that satisfies the minor area degree requirements within the College of Education. A major in art may be taken without a minor in the elementary specialization option and in the secondary emphasis option. A combination of elementary and secondary options requires a major and minor in art.

314; Architecture 300, 301, 302, 310, 311, 312; Mechanical Engineering 201, 202, 203, 342; Engineering 120, 351; Economics 200; Communications 226; Speech 103; Physics 110, 111; Psychology 100 or Sociology 110; Marketing 300.

CURRICULUM IN INTERIOR DESIGN

The requirements are 130 credits composed of 102 credits in art and art history, 22 credits in architecture, and 6 credits in home economics. The following courses are required: Art 105, 106, 107, 109, 110, 129, 262 (first-year program); Art History 201, 202, 203, 283; Art 259, 310, 311, 312, 319, 320, 321, 472, 473, 474; 21 elective credits in art or humanities; Architecture 300, 301, 302, 310, 311, 312, 150, 151; Home Economics 125 and Home Economics 329 or Art 250.

CURRICULUM IN METAL DESIGN

The requirements are 126 credits composed of Art 105, 106, 107, 109, 110, 129 (first-year program); Art History 201, 202, 203 and 6 elective credits in art history; Art 254, 357, 358, 359, 457, 458, 459, 499 (15 credits); and 44 elective credits in art.

CURRICULUM IN PAINTING

The requirements are 130 credits composed of Art 105, 106, 107, 109, 110, 129 (first-year program); Art History 201, 202, 203, 381, and 3 elective credits in art history; Art 265 (9 credits); Art 256, 257 (6 credits), 259, 307 (6 credits), 309, 360 (9 credits), 463 (18 credits), or 325 (9 credits for 9 credits of 463); Art 272 (6 credits), 274, 350, 351 (6 credits); and 22 elective credits in art.

CURRICULUM IN PRINTMAKING

The requirements are 130 credits composed of Art 105, 106, 107, 109, 110, 129 (first-year program); Art History 201, 202, 203, 392; Art 350, 351 (6 credits), 450 (15 credits), 499 (15 credits); Art 256, 257, (6 credits), 265 (9 credits), 272 (6 credits), 307 (6 credits), 360 (9 credits); and 21 elective credits in art.

CURRICULUM IN SCULPTURE

The requirements are 126 credits composed of Art 105, 106, 107, 109, 110, 129 (first-year program); Art History 201, 202, 203, 382; Art 272 (6 credits), 274, 332 (15 credits), 335, 337, 436, 437, 438; Art 201, 202, 253, 256, 257, 265 (6 credits); and 30 elective credits in art.

Graduate Programs

Graduate Program Adviser
Wendell Brazeau
104 Art Building

The School of Art offers courses leading to the degrees of Master of Arts in the field of art history, Master of Fine Arts, Master of Arts for Teachers, and also courses

for the Doctor of Philosophy degree program offered by the interdisciplinary Art History Group of the Graduate School. (See Interdisciplinary Graduate Degree Program section.) Graduate standing in the School of Art is granted only on presentation of credentials from art schools or university art or art history departments whose standards are recognized by this School. Samples of work done in these schools or art departments must also be presented by applicants for admission to the Master of Fine Arts and Master of Arts for Teachers degree programs.

In addition to Graduate School general admission requirements, students desiring to pursue a course of study leading to the master's degree must have a grade average of B or better in the undergraduate art major and must have completed the equivalent of the undergraduate degree requirements in the School of Art, University of Washington. The School of Art may require additional undergraduate work beyond the basic minimum if it is necessary to make up deficiencies or inadequacies.

Master of Arts

Candidates for the degree Master of Arts in the field of art history must meet the requirements of the Graduate School, demonstrate competence in French or German, pass a comprehensive examination in art history at the level of a sound general survey, offer a minimum of 36 course credits and 9 thesis credits (half of the 36 credits must be in courses numbered 500 or above), and present and defend a thesis. The thesis may be the extension of a seminar paper that demonstrates the student's familiarity with sources and his capacity for synthesis and critical evaluation.

Master of Fine Arts

Students accepted for admission will be required to complete a program of a minimum of 36 credits of scheduled class work and 9 credits of thesis for a total of 45 credits for the degree. No foreign language is required. The thesis is in the nature of a project, such as a series of paintings, prints, sculptures, ceramic objects, designs in metal or fabric, executed with a background of research. It is the policy of the School of Art, since 1967-68, to recommend admission of prospective aspirants to the M.F.A. program once a year only, for the Autumn Quarter.

A selection of the student's thesis may be reserved for inclusion in the annual exhibition of masters' theses of the School of Art at the Henry Art Gallery.

Master of Arts for Teachers

Students accepted for admission into the M.A.T. program must have completed at least one year of successful teaching experience on the elementary, secondary,



or college level, prior to initial entry. The program requires completion of a minimum of 36 credits, 9 of which may be a field-related thesis. Additional course work, including a research study, may be taken in lieu of the thesis. No foreign language is required.

More detailed information regarding the Master of Fine Arts, Master of Arts for Teachers, and Master of Arts may be obtained from the Graduate Program Adviser in Art.

ASIAN LANGUAGES AND LITERATURE

Chairman

Turrell V. Wylie
300 Thomson Hall

Professors

Richard N. McKinnon, Roy Andrew Miller, Paul L.-M. Serruys, Vincent Y. C. Shih, Turrell V. Wylie

Associate Professors

Ilse D. Cirtautas, Joseph R. Cooke, Edwin M. Gerow, Dau-lin Hsu, Fred Lukoff, Tamako Niwa, Doo Soo Suh, Isabella Yen

Assistant Professors

Jerry Norman, Harold F. Schiffman, Ted Takaya, Ching-hsien Wang

Lecturer

Noburu Hiraga

The Department of Asian Languages and Literature teaches languages and literatures of South, Southeast, East, and Inner Asia. The student becomes acquainted with cultural and political entities different from his own, which may be regarded as indispensable to a proper understanding of his own nation and culture, and the other nations and cultures of the West. Courses making up the Department curricula lead to the degrees of Bachelor of Arts, Master of Arts, and Doctor of Philosophy.

This aim is furthered through the study of the main creative manifestation of these entities—their literature. Other aspects of these cultures, such as their history and geography, their social and political institutions, and their thought systems, are dealt with in courses offered by the Institute for Comparative and Foreign Area Studies and its cooperating departments. The Department and the Institute work in close cooperation; most department faculty also hold membership in the Institute.

In addition to instruction in the history and structure of these languages *per se*, the Department, in close

cooperation with the Department of Linguistics, provides an introduction into the methods and concepts of professional linguistics. Finally, the Department provides training in the handling of historical texts and textual criticism, and such related methods and concepts as are needed by the professional philologist.

Undergraduate Programs

Adviser

Turrell V. Wylie
300 Thomson Hall

Graduation requirements are: East Asia 210 or History of Asia 213 or equivalent; at least 25 credits in language beyond the second-year level; and at least 20 credits in courses dealing with the literature and culture of the area of the major language, excluding 499. Literature courses in English count only as area courses. Language and literature majors may, at the invitation of the Department, register for a maximum of 15 credits of undergraduate research (Asian Languages and Literature 499).

For students in the College of Education, the Department offers minor academic fields in Chinese and Japanese for those preparing to teach in secondary schools. (See *College of Education* section.)

Graduate Programs

Graduate Program Adviser

Turrell V. Wylie
300 Thomson Hall

The Department of Asian Languages and Literature offers programs of study leading to the Master of Arts and Doctor of Philosophy degrees. Students who intend to work for these degrees must meet the requirements of the Graduate School as outlined in the *Graduate Study* section. Requests for applications for admission should be addressed to the Graduate Program Adviser, Department of Asian Languages and Literature. Applicants are required to submit with their application three letters of recommendation plus a statement of purpose (plan of study and advanced degree objective).

Master of Arts

The Department offers programs leading to a Master of Arts degree in any one of its languages and in literature, or in a combination of related or relevant languages for which there are sufficient faculty and library resources for teaching and research. Programs are presently offered with specializations in Chinese, Japanese, Korean, South Asian, Tibetan, and Turkic languages and literature.

Departmental requirements. Regardless of the field of

specialization, the general requirements of the Department for the M.A. degree include the successful completion of a carefully planned course program, a thesis, and a final oral examination based on the thesis and course work. The course program will be established on an individual basis in discussions between the student and his adviser, and it must be approved by his Supervisory Committee, the Graduate Program Adviser, and the Chairman of the Department. The program will take into account the student's background and special interests; however, it must constitute a comprehensive and interrelated set of courses within the language and literature framework.

Each aspirant for the M.A. degree is required to write a thesis based on original research in the language or languages and literature selected. After the oral examination on the thesis, the student's Supervisory Committee will evaluate the student's qualifications to determine whether he should be admitted to a Ph.D. program upon petitioning.

The M.A. program requires a minimum of 45 course credits plus 9 thesis credits. At least 12 of the 45 course credits must be in seminar work, and at least 18 credits must be in courses numbered 500 or above. The student is also required to pass a graduate reading examination in one foreign language other than the language chosen as the field of specialization. This foreign language must be relevant to the M.A. program and be other than the student's native language. Any additional requirements will be found in the descriptions of field specialization below.

Chinese Language and Literature. Admission to the M.A. program with specialization in Chinese Language and Literature requires that a student have strong undergraduate preparation in any of the following: Chinese language and literature, another language and literature, Asian Regional Studies, Comparative Literature, Linguistics, English, Philosophy, or History. He will, in addition, be expected to have reached the 400-course level in modern Chinese. Students lacking such preparation may be admitted to the M.A. program; however, they should plan to remedy background deficiencies by adding as early as possible those courses considered necessary by their academic adviser.

Course requirements. The M.A. course program established should include, in each case, the following courses or their equivalents: Chinese Literature (Chinese 461, 462, 463); Studies in Chinese Literature (Chinese 561, 562, 563); Chinese Reference Works and Bibliography (Chinese 407); Chinese History (that of the period of special interest); Introduction to Texts in

Ancient Script (Chinese 542, 543, 545, 546), or Classical Chinese (Chinese 451, 452, 453), for students with a language emphasis, and one course in Comparative Literature or literary criticism for students with a literature emphasis. At least 12 of the student's total credits should represent seminar work. Courses with seminar status are Chinese 540, 542, 543, 545, 546, 560, 572, 580, 581, 582, 583. With approval of the Graduate Program Adviser, the student may offer one seminar from another section of the Department toward fulfillment of this stipulation. Completion of this core curriculum or its equivalent will satisfy the course requirements for the M.A. degree.

Prior to commencing his thesis work, the student will demonstrate to his adviser and Supervisory Committee that competence has been attained in the Chinese language, modern and classical, equivalent to that demanded at the levels of Chinese 413 and 453, respectively.

Although the concept of fields is not applied in the M.A. program, a student will usually, in the establishment of his course program, seek a special emphasis which reflects his particular interests. Most commonly the emphasis will be on either literature or language. In either case, the other area cannot be neglected in the program. "Literature" is to be understood to mean polite literature. Other kinds of literature, such as philosophical or religious literature can, however, be accommodated in the program. Courses offered in other departments, such as Linguistics, Comparative Literature, or one of the other language and literature departments, may constitute valuable additions to the program where they support and enrich a special emphasis.

A thesis may not be submitted before the successful completion of the course program.

Japanese Language and Literature. For admission to the M.A. program with specialization in Japanese Language and Literature, a student must have strong undergraduate preparation in any of the following: Japanese language and literature, another language and literature, Asian Regional Studies, Comparative Literature, Linguistics, English, Philosophy, or History. He will, in addition, be expected to have reached the 400-level courses in Japanese. Students lacking such preparation may be admitted to the M.A. program; however, they should plan to remedy background deficiencies by adding, as early as possible, such courses as their academic adviser considers necessary.

Course requirements. The following courses are normally required: Japanese 421, Japanese Literary Tra-



dition in English; 422, Tokugawa Literary Tradition in English; 423, Modern Japanese Literature in English; 441, Studies in Japanese Poetry in English; 442, Studies in Japanese Prose in English; 443, Studies in Japanese Drama in English; 461, 462, 463, Readings in Modern Japanese Literature (in Japanese). If the student's background is sufficiently broad, other courses may be substituted. Additional course work in related fields may be required to meet the needs of each program.

Other requirements. Each student is expected to pass a Japanese language examination demonstrating both a basic knowledge of the language and an ability to use Japanese materials in his field of concentration. The student must prepare a thesis, based upon original research, making use of Japanese materials, which forms the basis for his final oral examination after the completion of the thesis.

Korean Language and Literature. Admission to the M.A. program with specialization in Korean Language and Literature requires that a student have two years of Korean language, or the equivalent of Korean 211, 212, 213, Elementary Korean, and Intermediate Korean 311, 312, 313. His background should consist of at least one course in Korean history, Korean civilization, and Korean literature in English translation; a survey course in linguistics equivalent to Linguistics 400 and a world classics series such as Comparative Literature 300, 301, 302.

Course requirements. The 45 course credits for the M.A. program should be distributed as follows: 30 credits in Korean language and literature courses numbered 400 and above and 15 credits in Comparative Literature or literary criticism or linguistics.

Other requirements. A thesis is required in addition to course work. The thesis proposal must be approved by the student's Supervisory Committee. An oral examination follows the submission of the thesis at the discretion of the Supervisory Committee and, in addition, the student may be examined on the thesis and on any of the subject matter covered in course work.

South Asian Languages and Literature. Admission to the M.A. program with specialization in South Asian Languages and Literature requires that a student have strong undergraduate preparation in a South Asian language or literature, in South Asian regional studies, or in a humanistic discipline pertinent to the study of Indic civilization. He will be expected to have completed the third-year level in one Indic or Dravidian language and to have had elementary work in another. The student lacking such preparation may be admitted

to the M.A. program; however, he should plan to remedy background deficiencies by adding, as early as possible, such courses as his academic adviser considers necessary. South Asian languages presently offered at the University are Sanskrit, Tamil, and Hindi-Urdu.

Course requirements. The M.A. program requires a minimum of 45 course credits plus 9 thesis credits. A minimum of 18 credits must be taken at the 500 level or above (including 12 credits in seminar work). A specific program is worked out on an individual basis between the student and his professor.

In addition the student must write and defend a thesis and pass an examination based on course work. Advanced work in Indian history is also required.

Tibetan Language and Literature. Admission to the M.A. program with specialization in Tibetan Language and Literature requires that a student have an adequate background knowledge of Indian and Chinese cultural history, and knowledge equivalent to Linguistics 200, Introduction to Linguistics, and South Asia 472, Introduction to Buddhism. The following courses or their equivalents are normally required: Tibetan 401, 402, 403, Colloquial Tibetan; 404, 405, 406, Literary Tibetan; 414 (maximum of 9 credits), Readings in Tibetan. The student lacking such preparation may be admitted to the M.A. program; however, he should plan to remedy background deficiencies by adding as early as possible the courses considered necessary by his academic adviser.

Course requirements. The 45 course credits for the M.A. program must include Tibetan Language and Literature courses at the 500 level or above. The following courses or their equivalents are also required: Inner Asia 431, Tibetan History, and Inner Asia 464, Tibetan Buddhism. Seminar credit should be taken in Inner Asia 598, Inner Asia Research Colloquium.

In addition, each student must pass a Tibetan language examination demonstrating a basic knowledge of the language and the ability to use Tibetan materials for research. Besides writing and defending a thesis, the student must pass an examination covering course work and general background knowledge.

Turkic Languages and Literature. Admission to the M.A. program with specialization in Turkic Languages and Literature requires that a student have adequate background knowledge in Turkic history and culture and the equivalent of South Asia 472, Introduction to Buddhism, and Near Eastern 210, Introduction to Islamic Civilization and Culture, and 420, Islamic Religious Literature in English. The student should have at least two years of Uzbek as the major Turkic language

of Inner Asia. Students lacking such preparation may be admitted to the program; however, they should plan to remedy background deficiencies by adding, as early as possible, those courses considered necessary by their academic adviser.

Course requirements. The 45 course credits must include Turkic Languages and Literature courses at the 500 level or above. Seminar credit may be taken in Inner Asia 598, Inner Asia Research Colloquium.

Doctor of Philosophy

The general departmental requirements and procedures for entering and completing a Ph.D. program in Asian Languages and Literature are applicable to all specializations offered. For convenience and brevity they are described in detail only in the first one listed below, "Chinese Language and Literature." Therefore, students seeking to enter a Ph.D. program in a specialization other than Chinese should read the description of that program carefully for general requirements, ignoring specific data that pertain only to the field of Chinese.

Chinese Language and Literature. A student wishing to enter the Ph.D. program with specialization in Chinese Language and Literature shall, irrespective of his particular qualifications, submit a formal petition so stating and requiring the signatures of his adviser, the Graduate Program Adviser, and the Departmental Chairman, *only after the successful completion of three full quarters of graduate study in Chinese Language and Literature.*

The prospective candidate will ideally have completed the requirements for an M.A. degree in the field of Chinese Language and Literature prior to entering the program. If he has not received the M.A. in this particular field but has this degree in another language and literature, e.g., in Asian Regional Studies, Linguistics, Comparative Literature, Philosophy, or History, he need not earn the M.A. degree in Chinese Language and Literature but will be expected to satisfy curriculum requirements of the M.A. during the course of his study.

Upon admission to the program, the student should be entering at least 500-level courses in modern Chinese and should have studied classical Chinese for a minimum of one year.

A student who intends to go directly from the B.A. to the Ph.D. program must present an unusually strong background preparation in the disciplines of literary study or linguistics. He will be expected, in the course of his work, to satisfy all curriculum requirements for

the M.A. He must petition the Department for permission to bypass the M.A.

A student admitted to the Ph.D. program shall, at the discretion of his adviser, add to his basic program any course considered necessary to remedy an insufficiency in background.

Course requirements. The student shall satisfy all curriculum and degree requirements for the M.A. degree in Chinese Language and Literature, with the exception of the M.A. thesis and the oral Final Examination, where this degree is not taken. Beyond this, his most important work will be done in seminars and other courses at the 500 level and above, where he will be developing his four fields of specialization.

At some time prior to the General Examination, the student will demonstrate to his adviser an advanced proficiency in both classical and modern Chinese and at least a reading knowledge in one other Asian language. Upon the successful completion of his individually established course program, members of the student's Supervisory Committee will administer to him the General Examination, in which he is expected to show preparedness in his chosen four fields of specialization. Knowledge both of original materials and of important scholarship pertaining to the fields is tested. Passing this examination, the student then writes his dissertation, under the direction of his appointed dissertation adviser. An oral Final Examination, in defense of the finished dissertation, completes the degree requirements for this program.

In addition to his examination in Chinese, the student is expected to pass examinations in one Asian and one European language scheduled by the Graduate School. The student may apply the foreign language required for the M.A. in Chinese language and literature to this requirement.

Other requirements. A field is considered to be an area of knowledge within Chinese Language and Literature which is investigated in depth and in which the student shall familiarize himself widely with original materials and scholarship relevant to these materials. The student is expected, in addition, to indicate some potential for original and creative scholarship within the area of knowledge through his response to it, his awareness of its problems, and of approaches which may be used in treating them. The four fields of specialization offered by each student may be chosen from Chinese linguistics (e.g., Chinese phonology, dialectology, epigraphy) and from among the periods, schools, genres, or major figures of Chinese literature (e.g., pre-Han literature, the colloquial novel, Six Dynasties "palace-



style" poetry). With the permission of his Advisory Committee, a student may offer, as one of his four fields, a field from the areas of general linguistics, literary criticism, a non-Chinese literature, Chinese philosophy, Chinese religion, or Chinese history (if specializing in modern literature). Should a field from outside the Chinese language and literature program be offered, it must be related in a helpful way to the student's other fields or to the acquisition of special disciplinary concepts and skills.

Japanese Language and Literature. Admission to the doctoral program, with specialization in Japanese Language and Literature, requires that the student have a Master of Arts degree, preferably in Japanese studies. However, an M.A. in the humanities, literature, or the fine arts is acceptable. Students who do not have a master's degree in the Japanese language and literature specialization will be expected to satisfy the requirements for that M.A. during the course of their studies.

Course requirements. In addition to the minimum of 54 credits or its equivalent required for the master's program, the student must take at least 50 credits of course work on the graduate level, including a minimum of two seminar-level courses. He also will complete at least 27 credits under Asian Languages and Literature 800 for conducting advanced research under authorized supervision on his doctoral dissertation.

Each student must have completed all the Japanese 400 series or its equivalent as outlined in the master's program and must complete the following courses:

JAPANESE 501	Readings in Bibliographical Materials	5
JAPANESE 505, 506, 507	Readings in Documentary Japanese	15
JAPANESE 551, 552, 553	Readings in Classical Japanese Literature	15
JAPANESE 590	Seminar in Japanese Literature	15
TOTAL		50

Additional course work in related fields may be required to meet the need of each program. In order to acquire the widest possible background, the student is encouraged to take related courses in history, intellectual history, religion, and the social sciences. Familiarity with Chinese literature and allied fields as well as comparative literature and linguistics is strongly recommended. Each student should consult with his adviser to work out a suitable program.

Other requirements. A written General Examination will be given on four separate fields which may include a period, genre, specific author and his work, or any other relevant topic to determine the student's extent of preparation in his major field and his ability to carry out advance research. The oral General Examination

will be devoted to the student's course work and his proposal for a research program after his written examinations. In addition to his examination in Japanese language, the student is expected to pass examinations, scheduled by the Graduate School, in one Asian and one European language. The student may apply the foreign language required for the M.A. in Japanese Language and Literature specialization to this requirement.

Korean Language and Literature. Students may arrange a Ph.D. program with specialization in Korean Language and Literature when faculty, library resources, and course offerings meet Graduate School requirements for such a program. In general, the program should be arranged in conjunction with the faculty of the Department of Comparative Literature, or the Department of Linguistics.

Doctoral programs, where the major discipline is other than Korean Language and Literature, are supervised by the department of the major discipline in cooperation with the Department of Asian Languages and Literature.

Tibetan Language and Literature. Completion of the master's program in Tibetan Language and Literature is required for admission. The student, having satisfied this requirement, must satisfy the following additional requirements: must be able to pass the graduate reading examination in a second Asian language related to Tibetan studies, and be familiar with the history and culture of the country of that second language. He is further required to have an adequate knowledge of Tibetan history and religion; but, if his research interests are in history, he should offer either Chinese or Mongolian as the second language. Those interested in Tibetan Buddhism should offer Sanskrit as the second language.

The student must present a program of study covering four fields, but not all four can be in Tibetan studies—two of the four should be in the second Asian language offered. The student may offer linguistics as a field, but this would not exclude him from offering at least one field in the second Asian language. Two of the fields must be in Tibetan studies. The following are suggested fields of study from which the student may select the required four: Tibetan language, literature, history, religion; Chinese language, literature, history, philosophy; Mongolian language, history, culture; Sanskrit language; Indian Buddhism; linguistics.

Other requirements. Upon completion of prescribed course work, the candidate must take the Ph.D. General Examination, which will consist of a written exami-

nation in each of the four fields of study selected, to be followed by a two-hour oral examination. One foreign language (in addition to the second Asian language) is required, and French, German, or Russian is suggested.

Dissertation. The Ph.D. dissertation should include research done in the second Asian language on materials relating to the Tibetan dissertation topic.

Turkic Languages and Literature. A student with an M.A. degree in Asian Languages and Literature, Near Eastern Studies, Linguistics, or Comparative Literature, may be admitted directly to the doctoral program upon formal petitioning; however, the student must meet the basic course requirements for the master's degree in the Turkic Languages and Literature specialization during the course of his studies.

Course requirements. Beyond satisfying the requirements of the M.A. program, the student must acquire proficiency in a second Turkic language, preferably Turkish, and develop four fields of specialization. Two of the fields must be in Turkic studies; a third is acceptable if its area of emphasis is on Turkish/Ottoman language or literature. The fourth field may be in Linguistics, Comparative Literature, Islamic Studies, or other relevant fields.

Other requirements. The student must pass a reading examination in two Turkic languages and one other foreign language relevant to his program of studies.

ASTRONOMY

Chairman

George Wallerstein

Professors

Karl-Heinz Böhm, Erika Böhm-Vitense, Paul W. Hodge, Theodor S. Jacobsen (emeritus), George Wallerstein

Associate Professor

James Bardeen

Assistant Professor

Paul E. Boynton

Astronomy is the science of the physical contents, size, form, and natural laws of the stellar universe. Its main branches deal with the positions, distances, motions, masses, composition, and form of the celestial bodies. The principal disciplines are divided into such specialties as celestial mechanics, solar system, stellar spectroscopy, stellar structure and evolution, interstellar matter, galactic structure, extragalactic nebulae, and cosmology.

Astronomy 101 is offered as an introductory description of astronomy for students in all fields. Astronomy 102 is the corresponding introduction for students with some background in physics. Astronomy 301 provides an in-

troductory for students in the physical sciences, mathematics, and engineering with a good background in general physics and calculus. The courses 321, 322, 323 give a detailed survey of astronomy for physical scientists. The 400-level courses are to provide background for advanced work in astronomy and are recommended for students in the physical sciences and mathematics. Graduate courses in the solar system, stellar atmospheres and interiors, interstellar matter, stellar dynamics, and galactic and extragalactic astronomy are offered.

Undergraduates who are interested in advanced work in astronomy are urged to major in astronomy or a related field such as physics and to take the 400-level as well as two or three 500-level courses in the senior year.

Undergraduate Programs

Adviser

Paul E. Boynton
255 Physics Hall

The Department of Astronomy offers a program leading to the degree of Bachelor of Science. The curriculum is presently based on the lower-division core courses provided by the Physics Department, but students must guard against the notion that involvement in physics or even formal physics courses ends with the junior year. The following minimum requirements are intended to allow the student some freedom in defining a program that may encompass a liberal arts education base, a combined major with the related field, or preparation for graduate-level astronomy.

Graduation Requirements

1. 30 credits of undergraduate physics to include: Physics 121 (Mechanics), 122 (Electromagnetism and Oscillatory Motion), 123 (Waves); 131, 132, 133 (General Physics Laboratory); 221 (Quantum Physics), 222 (Statistical Physics), 223 (Elementary Mathematical Physics); 321, 322 (Electromagnetism)
2. 24 credits of mathematics to include: Mathematics 124, 125, 126 (Calculus With Analytic Geometry) or 134H, 135H, 136H (Honors—Calculus With Analytic Geometry); and 224 (Intermediate Analysis), 327, 328 (Advanced Calculus) or 234H, 235H, 236H (Honors—Advanced Calculus)
3. 18 credits of astronomy to include: Astronomy 321, 322, 323 (Basic Astronomy); and 400- or 500-level courses
4. 12 additional credits in courses numbered 300 or above in astronomy, physics, or related fields, as approved by the student's adviser



Furthermore, every major is encouraged, regardless of his goals, to write a "Junior Paper" the Spring Quarter of the junior year. This is a library paper to provide some contact with the current literature. The topic is to be decided upon by the student in consultation with members of the faculty. The preparation of a more ambitious "Senior Paper," containing as much original research as possible, is intended to encourage student use of the observatory facilities and more contact with the faculty in a research rather than a classroom format. This research paper should involve two or possibly three quarters of the senior year. Both junior and senior papers are written as Astronomy 499 projects.

No grade less than C is acceptable in physics and astronomy courses fulfilling the above requirements.

If the student is seriously preparing for graduate work in astronomy, we strongly recommend the last 12 credits listed under Graduation Requirements (and additional ones) be associated with the following courses: Physics 323 (Electromagnetism), Physics 324, 325 (Quantum Mechanics), Physics 421 (Atomic and Molecular Physics), Physics 424, 426 (Mathematical Physics). Also, special emphasis is placed on the "Senior Paper."

Graduate Programs

Graduate Program Advisers

K-H. Böhm, G. Wallerstein
247 Physics Hall

The Department of Astronomy offers programs leading to the degrees of Master of Science and Doctor of Philosophy. Specific requirements are described briefly below. More complete information can be obtained by writing the Graduate Program Adviser.

Undergraduate preparation for graduate work in astronomy is expected to include a strong background in physics and mathematics. The graduate courses provide a background for research which may be conducted in a wide variety of possible topics. The University presently owns a 30-inch telescope in Central Washington and graduate students have access as well to the optical telescopes at the Kitt Peak National Observatory, Cerro Tololo International Observatory, and the radio telescopes at the National Radio Astronomical Observatory. Theoretical research is conducted with the CDC 6400 and other equipment at the University's Computer Center.

PROGRAMS OF STUDY

Master of Science

A minimum of 36 credits must be completed of which at least 18 must be in courses numbered 500 and above. If a master's thesis is submitted, 27 course credits are

normally taken in addition to 9 credits of thesis. Of these 27 course credits a minimum of 12 must be 500-level astronomy courses. Where a nonthesis program is followed, at least 15 of the 36 course credits must be 500-level astronomy courses. The student must pass the departmental preliminary examination with a grade of A or B. Proficiency in one foreign language in which there is a substantial astronomical literature is required.

Doctor of Philosophy

The doctoral program is meant to give the student a broad background in astronomy and those aspects of physics and mathematics that have potential astrophysical applications. In addition, the student may take courses in related fields such as astronautics, atmospheric sciences, electrical engineering, and geophysics, depending upon his interests. Specifically, the Department of Astronomy expects a student either to take or to have equivalent knowledge of a minimum of 24 credits of physics at the 400 level or above. Of particular importance are atomic and nuclear physics and methods of mathematical physics. Students interested in theoretical astrophysics should plan on taking further physics and mathematics.

Near the end of the first year of graduate work, students will be examined by the Department in fields of general astronomy and undergraduate physics and mathematics. Near the end of the second year of graduate work a qualifying examination will be given that will emphasize the course work at the University of Washington. Upon the student's successful completion of this departmental qualifying examination, the Department of Astronomy will request the Dean of the Graduate School to appoint a Supervisory Committee to guide the student in accordance with the regulations of the Graduate School.

ATMOSPHERIC SCIENCES

Chairman

Robert G. Fleagle

408 Atmospheric Sciences-Geophysics Building

Professors

Franklin I. Badgley, Joost A. Businger, Phil E. Church, Robert G. Fleagle, Peter V. Hobbs, Richard J. Reed, Norbert Untersteiner

Associate Professors

James R. Holton, Conway B. Leovy, John M. Wallace

Assistant Professor

Alistair B. Fraser

Adjunct Associate Professors

Robert J. Charlson (Civil Engineering), Leo J. Fritschen (Forest Resources), Edward R. LaChapelle (Geophysics)

NCAR Affiliate Assistant Professor
Robert Dickinson

Research Assistant Professors

Satya P. S. Arya, Lawrence F. Radke, Richard R. Weiss

Research Associates

Kristina Katsaros, Gary A. Maykut, David A. Rothrock

Atmospheric sciences are concerned with applying the methods of theoretical and experimental physics to the study of the earth's atmosphere. The subject ranges from such topics as the microphysical processes involved in the formation of clouds and rain to a study of world-wide atmospheric circulations and the properties of the outer regions of the earth's atmosphere.

At the undergraduate level, the Department provides an elective curriculum which includes the branches of atmospheric physics, synoptic meteorology, and climatology. Students awarded a bachelor's degree by the Department are eligible for the rating of professional meteorologist given by the United States Civil Service Commission. Courses offered in the graduate program, leading to the Master of Science and Doctor of Philosophy degrees, emphasize more advanced aspects of the atmospheric sciences, including aeronomy, climatology, cloud physics, energy transfer, weather analysis and prediction.

Undergraduate Programs

Advisers

Franklin I. Badgley

418 Atmospheric Sciences-Geophysics Building

John M. Wallace

608 Atmospheric Sciences-Geophysics Building

GRADUATION REQUIREMENTS

Bachelor of Science

A minimum of 38 credits is required in atmospheric sciences courses numbered above 300, of which 20 credits must be earned in courses above 400. Courses required from other departments are Engineering 141, or equivalent; Mathematics 124, 125, 126; Physics 121, 122, 123, 131, 132, or equivalent; and two courses from the following: Mathematics 327, 328, Aeronautics and Astronautics 370, Physics 221, 222, 223.

A grade of C or better must be earned in each of the required courses in mathematics and physics. An overall grade-point average of at least 2.20 must be obtained in all courses taken in atmospheric sciences.

Programs and requirements for honors students will be arranged on an individual basis, under staff supervision.

HONORS IN ATMOSPHERIC SCIENCES

Adviser

Richard J. Reed

608 Atmospheric Sciences-Geophysics Building

The Department of Atmospheric Sciences offers an honors program at the junior and senior levels. Members of the College of Arts and Sciences Honors Program must fulfill the requirements of that program during the freshman and sophomore years. It is recommended, but not required, that prospective honors majors enroll in the honors sections of lower-division mathematics and physics courses listed as requirements for the degree in Atmospheric Sciences (Mathematics 134H, 135H, 136H, 234H, 235H, 236H, Physics 121H, 122H, 123H).

In order to obtain the bachelor's degree "With College Honors in Atmospheric Sciences," the candidate must satisfy all the regular degree requirements of the Department and must in addition earn a minimum of 6 credits in Atmospheric Sciences 390H (Tutorial in Atmospheric Sciences), and must successfully complete Physics 221, 222, and 223.

The honors student is also required to take the graduate record examinations in mathematics and physics and at least one upper-division course outside the science group, preferably from among the following: General History 311 (Science in Civilization: Antiquity to 1600), 312 (Science in Civilization: Science in Modern Society), and 412 (Science and the Enlightenment); and Philosophy 456 (Metaphysics), 460 (Philosophy of Science), and 470 (Advanced Logic).

With the approval of the Department, superior students who are not members of the College Honors Program may participate in the departmental honors curriculum and receive a bachelor's degree "With Distinction in Atmospheric Sciences." Selection of candidates for departmental honors will be made by the staff at the beginning of the junior year.

Graduate Programs

Graduate Program Advisers

R. G. Fleagle

408 Atmospheric Sciences-Geophysics Building

J. R. Holton

428 Atmospheric Sciences-Geophysics Building

Students who intend to work toward advanced degrees must meet the requirements of the Graduate School as outlined in the *Graduate Study* section. A bachelor's degree in a physical science, engineering, or mathematics is required for admission to the graduate program. The complete program for an advanced degree must be approved by the staff.



Prospective candidates for advanced degrees must take the Qualifying Examination which tests understanding of the fundamental aspects of the atmospheric sciences and the relevant mathematics and physics. It is given after completion of two quarters of graduate study. Those who pass this examination with distinction are encouraged to work toward the Ph.D.; those who pass at a lower level may continue to work toward the M.S.

Master of Science

The minimum course requirements are: 27 graduate credits exclusive of research or thesis, of which 3 must be in applied mathematics or mathematical physics and 15 must be in Atmospheric Sciences courses numbered above 500.

A thesis is required. It must demonstrate the student's ability to use research methods in a limited area and to discuss critically his own and other investigators' work.

Doctor of Philosophy

A student who passes the qualifying examination with distinction may embark on the Ph.D. program under the supervision of a faculty committee. The General Examination, which is taken at the end of the second year of residence, normally is an oral examination which tests depth of understanding of a topic within the student's area of special interest which is selected in advance.

At least half of the credits earned prior to the General Examination should be in courses numbered above 500, and at least 21 credits should be earned in approved mathematics and physics courses numbered above 400. The dissertation is an important part of the student's program; it must represent an original contribution of substantial scientific importance.

BIOCHEMISTRY

Chairman

Hans Neurath

J405 Health Sciences Building

Biochemistry is a study of the chemistry of life processes and as such constitutes one of the rapidly expanding branches of biological sciences. There is no curriculum leading to an undergraduate degree in biochemistry, but students following the Bachelor of Science curriculum in biology or chemistry may include as part of their degree program courses offered by the Department of Biochemistry. Courses in biochemistry are of particular interest to undergraduate students in zoology, botany, genetics, microbiology, or chemistry.

Graduate Programs

Graduate Program Adviser

William W. Parson

J405 Health Sciences Building

Students who intend to work toward the Master of Science and Doctor of Philosophy degrees in biochemistry should consult the *Graduate Study* and *School of Medicine* sections.

BIOLOGY

Undergraduate and graduate courses and curricula in the biological sciences are offered by the departments of Botany, Genetics, and Zoology, as well as in several departments of the School of Medicine. Courses are listed in the *Description of Courses* under "Biology," as well as under the several departments. An interdepartmental program in biology leading to the bachelor's degree is described in the *Interdepartmental Programs* section of this catalog. The departments of Botany and Zoology jointly offer a major in biology for students in the College of Education. (See *College of Education* section.)

BOTANY

Chairman

Arthur R. Kruckeberg

240 Johnson Hall

Professors

Robert E. Cleland, C. Leo Hitchcock, Arthur R. Kruckeberg, Bastiaan J. D. Meeuse, Richard E. Norris, Daniel E. Stuntz, Richard B. Walker

Associate Professors

H. Weston Blaser, Matsuo Tsukada, Howard C. Whisler

Assistant Professors

Arnold J. Bendich, Roger del Moral, Walter Halperin, Edward F. Haskins, J. Robert Waaland

Lecturer

Clarence V. Muhlick

Botany includes in a broad sense all aspects of the study of plants. More specifically, study of the following are included: the structure, classification, and development of the various groups in the plant kingdom; reproduction, genetics, and evolution; the physiology and biochemistry of cells and of the multicellular plant; the relations of plants to their environments; the application of botanical information in landscaping, horticulture, pharmacy, forestry, and other fields. In this Department, general training in these various topics may

be followed by more intensive study of plants in natural habitats on land and in the water, microscopic observations, experimental studies in the greenhouse and the laboratory, herbarium studies, and biochemical experiments in growth and development.

Elementary courses in both general biology and general botany offer to the nonscience major an opportunity to learn general scientific principles as well as learn about the world of living plants. Professional students in forestry, education, pharmacy, oceanography, and other fields may develop a knowledge of botany necessary or useful in their vocations. For others, their studies lead to the career of professional botanist.

The Department of Botany offers courses leading to the degrees of Bachelor of Science, Master of Science, and Doctor of Philosophy. In conjunction with the Department of Zoology, a major academic field and a minor academic field in biology are offered for students in the College of Education; see *College of Education* section.

For students who do not expect to take more than 5 credits in this subject, 110 or 113 is recommended. For those who expect to take 10 credits, two of the following are recommended: 110, 113, or 220. Students intending to become botany or biology majors should normally start with the Biology 210, 211, 212 sequence. All biology courses, Genetics 451, and Microbiology 301 or 400 may be used for botany credit.

Entering students with exceptional ability or preparation are encouraged to consider advanced placement examinations. The Department wishes to encourage the progress of students by allowing advanced standing where justified.

Undergraduate Programs

Adviser

H. Weston Blaser
306 Johnson Hall

GRADUATION REQUIREMENTS

Bachelor of Science

At least 59 credits are required for this degree. Courses must include Chemistry 140, 150, 160 or Chemistry 101, 102; Biology 210, 211, 212, or Biology 101-102; Genetics 451 or Zoology 301 or Biology 211; and Botany 220. One course from each of the following four groups is required: Botany 113 or 313; Botany 371, 472, or 478; Botany 360, 446; Botany 444, 450, or 480. Two additional upper-division courses in the biological sciences, which may include any upper-division botany, biology, zoology, microbiology, or genetics course.

Graduate Programs

Graduate Program Adviser

Richard B. Walker
240 Johnson Hall

Master of Science or Doctor of Philosophy

Students who intend to work toward the degree of Master of Science or Doctor of Philosophy must meet the requirements of the Graduate School as outlined in the *Graduate Study* section. Organic chemistry is a requirement for an advanced degree in the Department of Botany; Chemistry 231, 232, or 231, 235, 236 are recommended.

CHEMISTRY

Chairman

Norman W. Gregory
200 Bagley Hall

Professors

Arthur G. Anderson, Jr., George H. Cady, Ernest R. Davidson, David F. Eggers, Jr., Arthur W. Fairhall, Martin P. Gouterman, Norman W. Gregory, George D. Halsey, Edward C. Lingafelter, Jr., Yeshayau Pocker, Benton S. Rabinovitch, David M. Ritter, Rex J. Robinson (emeritus), Verner Schomaker, Wolfgang M. Schubert, Leon J. Slutsky, George H. Stout, Robert Vandenbosch

Associate Professors

William S. Chilton, Alden L. Crittenden, C. Beat Meyer, Norman J. Rose, Victorian Sivertz (emeritus), Boris Weinstein, Darrell J. Woodman

Assistant Professors

Niels H. Andersen, Bruce E. Eichinger, John W. Macklin, J. Michael Schurr

Chemistry is a branch of natural science that deals principally with the properties of substances, the changes they undergo, and the natural laws that describe these changes. A research chemist may work with the objective only of advancing the science or he may strive to accomplish a goal having economic value. Many different careers ranging from teaching or research in pure science to industrial research or administration are open to chemists.

Chemistry also supplies part of the essential background for medicine, engineering, and other scientific or technical subjects. Science is an important part of modern culture, and some of the courses serve as good natural science electives for students majoring in one of the humanities or social sciences.

The Department of Chemistry offers curricula leading to the degrees of Bachelor of Science, Bachelor of



Arts, Master of Arts for Teachers, Master of Science (both with and without thesis), and Doctor of Philosophy.

Undergraduate Programs

Adviser

Ernest R. Davidson
200 Bagley Hall

For undergraduate students, the Department provides two curricula leading to bachelor's degrees: a Bachelor of Science curriculum with an intensive study of chemistry and related sciences in preparation for a professional career or for graduate study, and a Bachelor of Arts curriculum which provides a basic introduction to chemical science and allows a wider choice of electives in fields outside the physical sciences. In addition, the Department offers major and minor academic fields for students in the College of Education. (See the *College of Education* section in this catalog.)

Students planning to major in chemistry are advised to take in high school 3 units of German, at least 3 units of mathematics, including $1\frac{1}{2}$ units of algebra and $\frac{1}{2}$ unit of trigonometry, 1 unit of physics, and 1 unit of chemistry.

Transfer students must present courses equivalent to those required of resident students and complete at least 9 credits in chemistry in this Department in order to receive a degree with a major in chemistry.

GRADUATION REQUIREMENTS

Bachelor of Science

Programs leading to the Bachelor of Science are designed to prepare students for professional careers in such diverse fields as chemical physics, nuclear chemistry, instrumental analysis, industrial chemistry, biochemistry, and the chemistry of medicinals, as well as in analytical, inorganic, organic, and physical chemistry.

The departmental program for this degree includes mathematics, English composition, one year of college physics, specified courses in chemistry as indicated below (chemistry majors are strongly advised not to take any of the foregoing required chemistry, mathematics, and physics courses on the pass/fail basis), and 21 credits of approved upper-division science electives which may include courses in biochemistry, physics, mathematics, etc. For graduation, the student must possess a reading knowledge of German, French, or Russian (the American Chemical Society recommends German), obtain a grade-point average of at least 2.50 in all Chemistry Department courses, with a C or bet-

ter in each course, and achieve a total grade-point average of 2.50 or better.

The required courses for a bachelor of science degree are: 5 credits of English composition; one year of physics, including 1 credit of laboratory (Physics 121, 122, 123, 132 are recommended); Mathematics 124, 125, 126 and two additional courses numbered 200 or above (Mathematics 327 and 238 are recommended); one year of German (or French or Russian) or placement into the second year on the language placement examination; Chemistry 145 (or 140), 155 (or 150), 221; Chemistry 335H, 336H, 337H, 346H, 347H (or 231, 235, 236, 241, 242 and a passing score on the standard ACS examination in organic chemistry); Chemistry 455, 456, 457; 10 credits from Chemistry 460, 461, 462, 463; Chemistry 414 (or 416). Students with inadequate backgrounds in laboratory work or descriptive chemistry should include Chemistry 151 and/or 160 in their freshman program. Exceptionally well prepared students may substitute Chemistry 147H, 157H, 167H for 145, 155, 221. Interested students may elect to take Chemistry 198 or 199 during their first two years.

The science electives usually include some chemistry courses selected from Chemistry 410, 416 (or 414), 415, 418, 426, 427, 499, and additional credits in Chemistry 461, 462, 463. Other electives frequently chosen are Biochemistry 440, 441, 442, 444, 499; mathematics and physics courses at the 200 level or above; Electrical Engineering 400; Microbiology 301 and 400; Atmospheric Sciences 301; Genetics 451.

Bachelor of Arts

The program leading to this degree provides the student a broad choice of electives in fields other than science. It is especially adapted to the needs of students in premedicine and education, and of those seeking a liberal education with some concentration in science.

The required courses for a bachelor of arts degree are: 5 credits of English composition; one year of physics, including 1 credit of laboratory; Mathematics 124, 125, 126; Chemistry 140 (or 145), 150 (or 155), 160 (or 414 or 416), 221; Chemistry 231, 235, 236, 241, 242 (or 335H, 336H, 346H, 347H); Chemistry 350, 351, 455 (or 455, 456, 457); 6 credits from Chemistry 460, 461, 462, 463. Chemistry 151 is recommended to accompany 150 (or 155). Qualified students may take Chemistry 147H, 157H in place of Chemistry 140, 150, 221. Majors are strongly advised not to take any of the foregoing courses on a pass/fail basis. A grade of C or better should be obtained in each of the required chemistry courses.

Honors in Chemistry

Adviser

George D. Halsey
200 Bagley Hall

Members of the College of Arts and Sciences Honors Program may receive a bachelor's degree "With College Honors in Chemistry" if they fulfill the requirements of that program and, in addition, the following departmental honors requirements. With the approval of the departmental honors adviser, superior students who are not members of the College Honors Program may participate in the departmental honors curriculum during their junior and senior years and receive a bachelor's degree "With Distinction in Chemistry."

Honors students in General Chemistry usually take 147H, 157H, and 167H. Those wishing less laboratory emphasis may elect to take ad hoc honors in Chemistry 145 and 155 followed by Chemistry 221, nonhonors. Honors students should take the honors sequences in organic (Chemistry 335H, 336H, 337H, 346H, 347H) and physical (Chemistry 455H, 456H, 457H) chemistry. During their first two years, honors students are encouraged to enroll in Chemistry 199H, Special Problems.

In addition to the regular requirements for a bachelor's degree in chemistry, a candidate for an honors degree must have a grade-point average above 3.25 in chemistry courses and above 3.00 in other courses and must present at least 15 credits selected from the following: (1) Honors work in 400-level chemistry courses, exclusive of 499; (2) any chemistry course numbered 500 or above in which an A or B grade is earned; (3) upper-division courses in other sciences or mathematics as approved by the chemistry honors adviser.

Candidates for a Bachelor of Science honors degree must complete a minimum of 6 credits in Chemistry 499H and submit copies of an acceptable senior thesis to the professor who supervises his work and to the honors adviser before the last day of instruction of the quarter in which the degree is to be granted.

Candidates for a Bachelor of Arts honors degree must complete the same basic sequence of chemistry courses as that required of Bachelor of Science honors majors. Under (3) above, with prior approval of the chemistry honors adviser, upper-division courses outside the science group may be used. Candidates must prepare an honors paper on a topic selected in consultation with a member of the faculty and the chemistry honors adviser, each of whom must receive a copy before the last day of instruction of the quarter in which the degree is to be granted.

Graduate Programs

Graduate Program Adviser

Norman J. Rose
200 Bagley Hall

Prospective candidates for advanced degrees must meet the requirements outlined in the *Graduate Study* section of this catalog and be granted admission to the Graduate School.

A special program for teachers is offered. It assumes an undergraduate background equivalent to the requirements for the B.A. (College of Education) with a major in chemistry and leads to a Master of Arts for Teachers (M.A.T.) degree. The basic requirements are 36 credits of which 15 must be at the 500-level (or above), and 18 of the 36 credits must be in chemistry courses at the 400 level (or above) or in approved electives. An independent study must be completed and some teaching experience gained with college-level courses. No formal thesis and no foreign language are required.

Prospective candidates for Master of Science or Ph.D. degrees must take placement examinations when they begin graduate study. These examinations, designed to assess the student's knowledge and understanding of the material normally contained in an undergraduate program with a major in chemistry, are usually given shortly before the opening of each Autumn, Winter, or Spring Quarter. If not passed outright, these examinations lead to a set of special requirements, usually in the form of a sequence of remedial courses or re-examinations, which have to be satisfied within a year.

Prospective candidates for either degree must demonstrate proficiency in German, or an alternative foreign language designated by the research supervisor as valuable for the student's research. Proficiency is usually demonstrated by (1) translating from a scientific article with facility acceptable to the departmental language examiner, or (2) achieving a score greater than 550 on an ETS examination taken prior to entry into the Graduate School at the University of Washington, or (3) submitting evidence that the final term of a two-year college course in the language has been completed with a 3.00 grade-point average for all college courses in that language.

Prospective candidates for the Master of Science degree with thesis must complete a minimum of 36 credits, 18 of which must be 500 level (or above) and 9 in thesis research. The M.S. without thesis permits substitution of course work for a greater part of required research.

Students wishing to pursue the doctoral degree also take a series of cumulative examinations. These are



written examinations covering mainly the student's area of specialization (analytical, inorganic, organic, or physical chemistry) that are designed to stimulate independent study and thought; to evaluate the breadth of knowledge gained from courses, seminars, and the literature; and to test the student's ability to apply this knowledge to diverse problems. The General Examination requirement for the Ph.D. is considered to be satisfied when the performance on the cumulative examinations reaches a certain satisfactory level, when proficiency and diligence have been demonstrated in research, and when the language requirement has been met.

In general Ph.D. students take more course work (though still approximately equivalent to a full year's work) and are subject to a higher standard of performance than students working toward the master's degree. A minimum of three academic years of graduate study is required, with a strong emphasis on research. A dissertation, culminating in new contributions to knowledge and demonstrating capacity for original investigation worthy of report in the scientific literature, properly set forth in suitable literary form, must be examined and approved by a faculty committee. This dissertation is the subject of an oral presentation to the graduate students, the faculty, and a Final Examination committee.

In the Department of Chemistry, teaching experience as a graduate teaching assistant or predoctoral teaching associate is a further requirement for all students working toward the doctoral degree.

CLASSICS

Chairman

John B. McDiarmid
218 Denny Hall

Professors

Harvey B. Densmore (emeritus), John B. McDiarmid,
William M. Read

Associate Professors

Colin N. Edmonson, William C. Grummel, Pierre A.
MacKay, Paul Pascal

Assistant Professors

Lawrence J. Bliquez, Daniel P. Harmon, Louis J.
Vignoli

Classics is the study of ancient Greek and Roman civilization in all its aspects, from prehistoric times to the Middle Ages. It includes the Greek and Latin languages; the many kinds of literature written in them, such as poetry, drama, history, philosophy,

rhetoric, political theory; and ancient art and archaeology.

The Department of Classics offers programs leading to the degrees of Bachelor of Arts, Master of Arts, and Doctor of Philosophy. For the Provisional Teaching Certificate, it offers major and minor academic fields in Latin. Candidates for the Certificate may major in Latin in this Department, under the College of Arts and Sciences, or in the College of Education.

The undergraduate curriculum in Greek and Latin is designed to provide a general education through the reading of major literary works and to form a sound basis for teaching and further study. At the graduate level, courses and seminars are offered each quarter in both languages.

Archaeology courses survey and interpret the physical remains of antiquity in the light of modern archaeological methods and excavations. A knowledge of Greek and Latin is not needed for the undergraduate courses.

Classics courses in English are intended primarily for students who have not studied Greek and Latin. The lower-division courses in literature and word-derivation are general and introductory; each of the upper-division courses is concerned with a single literary type.

Students who are interested in taking courses in Latin or Greek should begin their study at the University as early as possible, since most advanced courses in the literature are offered only once every two years. Those who are uncertain of their preparation for any course or who wish to review work done elsewhere should consult the Department before registering. The prerequisite for any course may be waived at the Department's discretion.

Information about curriculum, requirements, and graduate appointments may be obtained from the Department.

Undergraduate Programs

Advisers

John B. McDiarmid, Eileen M. Niven
218 Denny Hall

GRADUATION REQUIREMENTS

Bachelor of Arts

CLASSICS MAJOR

Requirements are: 18 approved credits in upper-division Greek courses; 18 approved credits in upper-division Latin courses.

GREEK MAJOR

27 approved credits in upper-division Greek courses,

and 9 credits chosen with the approval of the Department from courses in Latin, upper-division Greek, classical archaeology, classics in English, ancient history, and the history of ancient philosophy.

LATIN MAJOR

27 approved credits in upper-division Latin courses, and 9 credits chosen with the approval of the Department from courses in Greek; upper-division Latin, classical archaeology, classics in English, ancient history, and the history of ancient philosophy.

Honors in Classics, Latin, or Greek

Adviser

William C. Grummel
224 Denny Hall

Members of the College Honors Program who wish to qualify for a bachelor's degree "With College Honors in Classics" or "... in Latin" or "... in Greek" must fulfill the requirements of that program during the freshman and sophomore years in addition to the departmental honors requirements shown below. With the approval of the Departmental Honors Committee, superior students who are not members of the College Honors Program may participate in the departmental honors curriculum and receive a bachelor's degree "With Distinction in Classics" or "... in Latin" or "... in Greek."

Requirements for admission to candidacy for an honors degree are: (1) a cumulative grade-point of 3.00 for the freshman and sophomore years, with an average of 3.50 for courses taken within the Department; (2) sufficient competence in either Latin or Greek to enter the upper-division courses in the languages.

Candidates for departmental honors "With Distinction" will be nominated by the Departmental Honors Committee in their sophomore or junior year.

The departmental honors curriculum follows:

Lower-division preparation

In addition to Latin and/or Greek courses, honors students are advised to take honors sections of General History (HST) 111 or of Ancient and Medieval History (HSTAM) 201 and 202.

Junior and senior years

In their junior year, honors students are assigned to a departmental adviser, under whose supervision they begin an independent reading project in either Latin or Greek. In the senior year, they write a senior thesis based on research in some subject of special interest to them. Normally 9 credits are earned in the reading list and senior thesis combined, under Latin or Greek 490H.

Graduate Programs

Graduate Program Adviser

William C. Grummel
224 Denny Hall

Students who intend to work toward advanced degrees must meet the requirements of the Graduate School.

Master of Arts

Requirements are a minimum of 27 credits in courses or seminars in Greek, Latin, and related subjects approved by the Department; a reading knowledge of either French or German; either an acceptable thesis or 9 additional credits in approved graduate courses and seminars.

Doctor of Philosophy

Admission to the Ph.D. program may be granted to a student who has demonstrated by his performance the capability to undertake study at the level represented by the requirements for the doctoral degree. Admission to the program is granted only after a student has satisfactorily completed (1) 27 credits in courses applicable toward a graduate degree in the department, (2) the Graduate School examination in German or French, and (3) examinations in the translation of Greek and Latin at sight. The sight translations are to be taken not later than the second quarter after the completion of 27 credits of graduate work.

Requirements for the Ph.D. are (1) a minimum of 72 credits in courses or seminars in Greek, Latin, and related subjects approved by the Department; (2) a reading knowledge of French and German; (3) satisfactory completion of examinations or approved courses in Greek and Latin composition; (4) satisfactory completion of translation examinations on the reading list of both Greek and Latin authors; (5) four research papers; (6) General Examinations for admission to candidacy; and (7) an acceptable dissertation and final examination on the dissertation.

Graduate students must have teaching experience before completing requirements for their terminal degrees.

COMMUNICATIONS

Director

Peter Clarke
129 Communications Building

Professors

William E. Ames, Richard F. Carter, Byron H. Christian (emeritus), Alex S. Edelstein, Milo Ryan (emeritus), Willard F. Shadel, Henry Ladd Smith, Daniel S. Warner (emeritus), Fendall W. Yerxa

**Associate Professors**

Peter Clarke, Pat Cranston, William F. Johnston, J. Reid Roller, Merrill Samuelson

Assistant Professors

R. Irv Broughton, William C. Parker, Don R. Pember, Ronald Pyszka, Gene E. Wike

Lecturers

Karl L. Holifield, Thomas F. Ris

Associate

Donald G. Godfrey

The School of Communications offers five undergraduate sequences. Through four sequences—editorial journalism, broadcast journalism, advertising, and radio-television—the School offers training for work in the mass media. Through a fifth sequence, communication, the School permits concentration on study of the communication processes. All five sequences lead to the degree of Bachelor of Arts.

The School also offers graduate programs leading to the degrees of Master of Communications, Master of Arts, and Doctor of Philosophy, and it cooperates with other departments and schools in providing courses to satisfy requirements for a Ph.D. minor.

The School maintains a research facility, the Communication Research Center, which contains a Graduate Student Center, reference materials, machine data-processing equipment, and a seminar room. The Center is designed to assist in the training of graduate students and to facilitate the research of the faculty of the School.

Undergraduate Programs**Undergraduate Adviser**

Sandra Williams

118 Communications Building

A student applying to enter the School of Communications must (1) present 90 credits and have completed no more than 20 credits in the School of Communications courses; (2) have completed Communications 150 and 200 (or their equivalents) with grades acceptable to the School faculty; (3) present a University of Washington grade-point average at least equal to the all-University cumulative average last reported (or, if transferring from an institution outside the University, a grade-point average of at least 3.00); (4) present a transcript of past work; (5) submit a letter outlining reasons for desiring to take a particular communications program; and (6) provide the results of test scores as required by the faculty. (Satisfaction of these minimum requirements assures consideration. It does not guarantee acceptance.) To continue as a major in the School he must maintain an acceptable grade-point average for all courses in the School and an average

no more than 0.3 of a point below the all-University average for all of his course work outside the School.

GRADUATION REQUIREMENTS**Bachelor of Arts**

A communications student in any sequence in the School may obtain the Bachelor of Arts degree by: (1) Fulfilling the requirements of the University and the College of Arts and Sciences; (2) completing at least 120 credits outside the School, including 10 credits of literature and 35 credits in related social science courses (elected from courses listed under "Social Sciences" in the College Distribution List in these departments: Anthropology, Economics, Geography, History, Philosophy, Political Science, Psychology, and Sociology, and including at least 20 credits from one department and at least 20 credits of upper-division courses); and (3) completing at least 50 credits within the School to meet all requirements of a specified program of study (except that an honors student may, with the permission of the honors adviser, substitute other courses for program requirements).

Programs of Study**Core Requirements**

Courses designed to give breadth to the program and required of all *majors* within the School of Communications are as follows: Communications 150, 200, 320, and two additional Communications courses at the 400 level, with the exclusion of Communications 449, 495, 496, 497, and 498. No 400-level course may be counted as satisfying both core and sequence requirements.

Before enrolling in required sequence courses, the student must complete the lower-division core requirements.

Sequence Requirements

Editorial Journalism: In addition to the core requirements for all Communications majors, students in the editorial sequence are required to take Communications 321, and 4 to 12 credits from among 323, 324, 325. The sequence in editorial journalism offers major and minor academic fields for students in the College of Education. (See *College of Education* section in this catalog.)

Broadcast Journalism: In addition to the core requirements for all Communications majors, students in the broadcast journalism sequence are required to take Communications 321, 322 or 323, 353, 354, 355, 356, 357, and 358.

Advertising: In addition to the core requirements for all Communications majors, students in the advertising

sequence, are required to take Communications 340, 341, 345, 346, 348, and Marketing 300.

Radio-Television: In addition to the core requirements for all Communications majors, students in the radio-television sequence are required to take Communications 349, 360, and 370; 361 or 371 or 473; 379 or 470; and 353 or 373 or 377 or 450.

Communication: In addition to the core requirements for all School of Communications majors, students in the communication sequence are required to take Communications 400, 406, 411, 414, 480, and 485; 348 or 402 or 470; and General History 454, Political Science 452, Psychology 345, and Sociology 443.

Honors in Communications

Adviser

William E. Ames

219 Communications Building

A student who is admitted to the College Honors Program and fulfills the requirements of the program during his freshman and sophomore years and completes the special requirements of the School of Communications listed below receives a bachelor's degree "With College Honors in Communications." A student who excels in his academic achievement may participate in the School's honors curriculum and receive a bachelor's degree "With Distinction in Communications."

The special requirements for the School of Communications include the completion of three 400-level communications courses (all of which have been designated for honors credit). In addition, an honors sequence, Communications 495H, 496H, and 497H, is offered for seniors seeking either college honors or departmental distinction. A student seeking college honors must also complete at least 30 honors credits in either a behavioral science or a humanities area. These 30 credits may be spread over no more than three departments and at least half of them must be upper-division. A student seeking the degree with distinction must complete 15 honors credits in either a behavioral science or a humanities area.

Graduate Programs

Graduate Program Adviser

Don R. Pember

235 Communications Building

Graduate work in communications is directed toward specialization within the general framework of scholarship in communication. An applicant must have completed the equivalent of an undergraduate major in communications or, before admission to any program, undertake such course work as a Supervisory Commit-

tee may specify as necessary preparation for graduate work. Although the University application closing date for Autumn Quarter is April 1, it is strongly advised that completed application forms for a master's program in communications be submitted prior to February 1. Matriculation is for Autumn Quarter only, except for remedial work.

An applicant for any program must submit evidence of undergraduate work; a letter of intent describing the applicant's educational and vocational aims, and how he sees one of the School's graduate programs contributing to those aims; results of required tests (the Graduate Record Examination and—for M.A. and Ph.D. programs—the Miller Analogies Test); and, where applicable, evidence of fluency in English. Only complete applications are considered. A Supervisory Committee is appointed for each graduate student admitted to one of the graduate programs. The committee will help specify courses applicable to the student's program. Its chairman will be the student's adviser.

Programs of Study

Master of Communications

This program has two options: (A) a program for those seeking academic work beyond the bachelor's degree but who do not intend to pursue a doctorate; (B) a program for those seeking academic work beyond the bachelor's degree for area specialization within the journalistic field.

Option A. Program requires work in two fields selected from social control, international communication, history, advertising, and communication theory and methodology. A field consists of at least 15 credits, including at least two 500-level courses in the School of Communications. The student will prepare a research paper covering work in one or more fields, utilizing an additional 9 credits for this purpose.

Option B. Program requires 25–27 credits in an area of concentration outside the School of Communications, 6–8 credits of general Communications studies, and 12 credits of seminar and practicum in the School of Communications in which the area of specialization is represented in a journalistic production of professional quality.

Master of Arts

This program leads to work toward a doctorate, emphasizing research scholarship. The formal requirements parallel those for the *Option A* program (see above) except that the student shall prepare a thesis rather than a research paper. The student also must meet the language requirement stipulated by the School for the Master of Arts degree.



All programs for the master's degree require 45 credits of course work, to include at least 20 credits at the 500 level or above. All have a time limit of three years from admission to a program. All but the Master of Communications, *Option B* program, require a full academic year in residence within a four-quarter period (excepting summers). The *Option B* program requires three full quarters of residence within two calendar years.

Doctor of Philosophy

This degree requires a core of work in communication theory and methodology. All students take a sequence of courses to prepare them to work with the concepts of communication at a level of methodological sophistication appropriate to the degree.

It is expected that the student specialize in one of three areas: communication theory and methodology, international communication, or history of communication. Work is expected in each of the other two fields. The student's Supervisory Committee plans an individual program, consistent with these requirements, which reflects the requirements of his professional objectives.

The language requirement for the degree has been set at competence in one foreign language, except for the international communication specialization, where two are required. (The student's Supervisory Committee will specify which languages can be taken—and may stipulate levels of competence required.)

A comprehensive General Examination is given each student prior to his acceptance as a candidate for the degree. The examination must be taken no later than seven quarters after matriculation from the master's degree (or its equivalent). It covers all fields of study, within and without the School of Communications.

It is expected that the student will undertake his doctoral dissertation immediately after passing the General Examination signifying admission to candidacy, and that he will complete his dissertation in residence unless his Supervisory Committee finds that work is necessary at some other place. A proposal must be prepared for the dissertation prior to the collecting of data. The proposal will be subject to review by the Graduate Faculty of the School as well as by the student's Supervisory Committee.

The student specializing in theory and methodology is expected to include the following course work: social control and the mass media, international communication, theory of communication, communication and politics, computer applications in communication research, communication research seminar, statistical methods, social psychology, learning, theories of social psychology, and experimental design. Additional work

is selected with the approval of his Supervisory Committee.

The student specializing in international communication is expected to include the following course work: comparative communication systems, public opinion and propaganda, seminar in comparative communication systems, seminar in public opinion and propaganda, research seminar, theory of communication, communication research, computer applications in communication research, statistics, and a field of courses from one of the social sciences related to his specialization. Additional work is selected with the approval of his Supervisory Committee.

The student specializing in history of communication is expected to include the following course work: history of mass communication, seminars in history and communication, communication research, theory of communication, historiography, philosophy of history, seminars in American history, social psychology, and a field of courses from history. Additional work is selected with the approval of his Supervisory Committee.

COMPARATIVE LITERATURE

Chairman

Frank J. Warnke

B436 Padelford Hall

Both the undergraduate and graduate programs in Comparative Literature include courses in the major field conducted by an interdepartmental faculty, as well as courses in literature offered by the Departments of Asian Languages and Literature, Classics, English, Germanic Languages and Literature, Near Eastern Languages and Literature, Romance Languages and Literature, Scandinavian Languages and Literature, and Slavic Languages and Literature.

The undergraduate program is described in the *Interdepartmental Programs* section of this catalog; departmental offerings in foreign literature in English translation are listed under the several departments named in the preceding paragraph.

Programs leading to graduate degrees are described in the *Interdisciplinary Graduate Degree Programs* section of this catalog.

DRAMA

Director

John D. Sydow, Jr.

113 Drama-TV Building

Professors

John A. Conway, Gregory A. Falls, Agnes M. Haaga, Robert B. Loper, Duncan Ross, Geraldine Brain Siks, John D. Sydow, Jr.

Associate Professors

Ruthanna Boris, Kenneth M. Carr, James R. Crider, Alanson B. Davis, Robert S. Gray, Warren C. Lounsbury

Assistant Professors

Vanick S. Galstaun, Eve Green, Richard Lorenzen, Eve Roberts, Aurora Valentinetti, John R. Wolcott

Instructor

Robert A. Dahlstrom

Lecturers

Julian Miller, Joyce Mobley, Richard Parks

Associate

Robert De Ceunynck

The study of drama is concerned with the whole continuum of acting, directing, designing, theatre history, and dramatic forms through which the human, dramatic imagination finds expression—from the spontaneous, imaginative play of children to the theatre arts of criticism. While the former are taught only in the School of Drama, many of the latter are taught in other departments. Since theatre is an ensemble art, an important part of its study is made through public and classroom productions of a great variety of plays: American and foreign, classical, and contemporary. Many courses are primarily studio courses involving lectures and theoretical materials plus direct, creative experience in the theatre arts.

Since drama is one of the fine arts, many students elect drama courses as an introduction to the arts. For other students it is a major subject in the humanities and suitable to a broad liberal education. Still others study drama as a beginning for a professional career, either in professional theatre or in educational theatre.

Dance faculty of the School of Drama offer dance technique courses at the beginning, intermediate, and advanced levels; special studies classes in pointe technique, partnering techniques, men's special techniques, period and character dance; and a course in the structure of music in relation to dance. All of these courses are open to students other than drama or music majors. Qualified dance students perform in productions sponsored by the Schools of Drama and of Music.

The School of Drama offers courses leading to the degrees of Bachelor of Arts, Bachelor of Fine Arts, and Master of Arts.

Undergraduate Programs

Adviser

James R. Crider

54 Drama-TV Building

For undergraduate students, the School provides a wide spectrum of courses from the field of drama and recommended courses of study in areas of interest covering acting, children's drama, design-technical, and directing, that lead to a Bachelor of Arts degree, and a professional curriculum in acting that leads to a Bachelor of Fine Arts degree. The School also offers a major academic field (for secondary and elementary education majors) in the College of Education; see *College of Education* section.

Prerequisites for all drama courses must be strictly adhered to.

GRADUATION REQUIREMENTS

Bachelor of Arts

Undergraduate drama majors are required to complete a minimum of 60 credits in drama courses, 20 of which must be at the 300–400 level, in addition to the College of Arts and Sciences requirements.

No student may exceed a maximum of 70 credits in School of Drama courses in his total degree program with the exception of the secondary teaching major/minor.

Faculty recommended courses of study for areas of interest include: Acting—(for students approved by the acting-directing faculty), 316, 351, 352, 353, 451, 452, and 453; Children's Drama—230, 316, 325 or 210, 211, 212, 460, and multiple options among 331, 336, 338, 431, 432, 436, 437, 438, and 492; Design-Technical—Art 105, 106, 107, 109, 110, 129; Art History 201, 202, 203, 283; Architecture 150, 151; General History 111, 112, 113, with multiple options among Drama 210, 211, 212, 410, 411, 412, 414, 415, 418, and 491; and Directing—101, 102, 103, 146, 151, 152, 153, 210, 211, 212, 251, 252, 253, 275, 276, 277, 316, 331, 351, 352, 353, 375, 376, 377, 455, 460, 461, 462, 476, 477, 478, 479, 482; Dance 101, 102, 103; Art History 201, 202, 203; General History 111, 112, 113; Music 116, 120, 121; Psychology 100, English 259, 322, 323, 324, 410, 411; Classics 427; Comparative Literature 301, French 417; Russian 422; Scandinavian 480, 481; and Spanish 420.

Curriculum in Drama Education: Students who wish to prepare for secondary school teaching should follow the curriculum prescribed below.

The requirements are 70 credits in drama composed of Drama 101, 146, 210, 211, 212; 251, 252 or 146, 151,



152; 153, 275, 276, 277, 316, 375, 376, 377, 460, and 12 credits in drama or approved cognates in other fields. Contingent upon meeting of prerequisites, 6 additional credits in Drama 461 and 462 are recommended. Students are advised to take the maximum course work possible in English or Speech.

Students who wish to prepare for elementary school teaching (College of Education) should follow the curriculum prescribed below.

The requirements are 46 credits in drama, composed of Drama 146, 151, 152 or 251, 252; 210, 211, 212 or 325; 230, 316, 331, 336, 338, 436, 438 and variable credits in drama electives and cognate courses approved by the drama adviser.

Bachelor of Fine Arts

The requirements for the candidates for this degree are listed below. A curriculum is offered for students who wish to train for the professional theatre as actors. Students will be required to complete a minimum of three years of study, combining certain College of Arts and Sciences courses with requirements in the major.

Admission

Official admission is made solely upon the results of an intensive audition. Students should have completed at least two years of college study, although this requirement may be waived for an exceptional student having only one year of college study.

First-year curriculum: Drama 121, 122, 123, 141, 142, 143, 155, 156, 157, 181, 182, 183, plus 15 credits from approved cognate courses.

Second-year curriculum: Drama 221, 222, 223, 241, 242, 243, 255, 256, 257, 271, 272, 273, plus 15 credits from approved cognates.

Third-year curriculum: Drama 371, 372, 373, 459 (3 quarters), plus 15 credits from approved cognates.

Graduate Programs

Graduate Program Adviser

John D. Sydow, Jr.

113 Drama-TV Building

It is assumed that all prospective candidates have completed the equivalent of the School's undergraduate drama requirements. The School of Drama may require additional undergraduate work if it is necessary to make up deficiencies or inadequacies.

In addition to Graduate School general admission requirements, a student electing a course of study in directing will submit a directorial analysis, not to exceed ten pages, double spaced, of a play he knows and

would like to direct, and two letters of recommendation.

Students electing a course of study in the area of design (costume or scenery) will submit a portfolio of designs, technical plots, or working drawings, etc.; two letters of recommendation about their artistic potential in design and their production capabilities; and a brief statement of purpose in acquiring a graduate degree.

Students electing a course of study in the area of children's drama will submit two letters of recommendation regarding background, experience, and ability in this area, and a brief statement of educational and professional objectives.

Master of Arts

In addition to the general requirements of the Graduate School, master's degree students are required to complete a minimum of 36 credits, including 501. Except in technical direction, a thesis production or a research thesis (Drama 700) is expected and may be a part of this total. Further, a student will elect one area of emphasis and complete the requirements: Directing—463, 561 (3 quarters), 562, 563 (6 quarters) and 700; Children's Drama—530, multiple options among 431, 432, 435, 436, 437, 438, 492, and 599, and 700 with 461 or 561 and 462 or 563 recommended for those electing a thesis production in Children's Theatre; Design (costume)—411, 415, 416, 417, 510, 511, 517, 518, 599 (2 quarters), and 700; Design (scenery)—410, 412, 414, 418, 419, 510, 511, 514, 517, 518, 599 (2 quarters), and 700; and Technical Direction—410, 411, 413, 414, 418, 419, 510, 513 (3 quarters), and 599 (2 quarters).

Also available is an option in theatre history.

A program leading to the Doctor of Philosophy degree is offered through the interdisciplinary Drama Arts Group of the Graduate School. (See Drama Arts in the *Interdisciplinary Graduate Degree Programs* section of this catalog.)

ECONOMICS

Chairman

Douglass C. North
301 Guthrie Hall

Professors

Yoram Barzel, James A. Crutchfield, Jr., J. Richard Huber, Kenneth M. McCaffree, John S. McGee, Morris David Morris, Vernon A. Mund, Douglass C. North, Dean A. Worcester, Kozo Yamamura

Associate Professors

Lowell R. Bassett, Steven N. S. Cheung, Barney Dow-

dle, J. Benton Gillingham, Feng-hwa Mah, Richard W. Parks, Robert P. Thomas, Judith Ann Thornton

Assistant Professors

Gardner M. Brown, Judith B. Cox, Mary L. Eysenbach, Michael G. Hadjimichalakis, Richard C. Hartman, Robert L. Higgs, John Allan Hynes, Roger L. Miller, Norman P. Obst, Timothy Ozenne, C. Michael Rahm, Potluri M. Rao, Eugene Silberberg

Economics is concerned with analysis of the ways in which societies organize the production of goods and services and the distribution of these goods and services among various functional groups and individuals within the society. It is a broad subject that includes such applied fields as economic history, public finance, international trade, comparative economic systems, development economics, natural resources economics, and labor economics.

Most of the undergraduate courses in economics are intended to serve the objectives of a liberal education rather than vocational objectives. A knowledge of economics has great value in contemporary society where the general welfare is increasingly affected by public policies on economic issues. The development of sound public policies requires a reasonably competent and informed electorate.

Economics is useful in a vocational sense for students planning careers in business and an undergraduate major in economics is excellent preparation for graduate work in law, public administration, urban planning, social work, or business.

Appropriate programs of graduate study in economics are available for those students seeking careers as professional economists in government, private enterprise, or education.

Undergraduate Programs

Adviser

Judith B. Cox
326 Savery Hall

GRADUATION REQUIREMENTS

Bachelor of Arts

Requirements in the field of economics are: Economics 200, 201, 281, 300, and 301, plus 25 additional credits in courses at the 300 level or higher. Of the 25 credits, 20 are to be taken in at least four fields other than theory, and the remaining 5 are to be taken in one of the chosen fields or in theory. Other requirements are elementary functions, one course (Mathematics 105 or equivalent); calculus, one course (Mathematics 124, 157, or equivalent); two other courses from logic (Philosophy 120, 370, 470, Mathematics 305, or equivalent),

calculus (Mathematics 125, 126, or equivalent), or accounting (Accounting 210 or equivalent—only one course may be chosen in accounting).

Honors in Economics

Adviser

Judith B. Cox
326 Savery Hall

Participants in the College of Arts and Sciences Honors Program who wish to qualify for a bachelor's degree "With College Honors in Economics" must fulfill the requirements of that program during the freshman and sophomore years, in addition to the departmental honors requirements listed below. With the approval of the department, qualified students who are not members of the College Honors Program may participate in the departmental honors curriculum and receive a bachelor's degree "With Distinction in Economics."

HONORS REQUIREMENTS

(1) Complete the following courses (or their equivalent as defined by the Department of Economics) with a minimum grade-point average of 3.00: honors sections of Economics 200, 201, 300, 301, and 496H (Honors Seminar, senior year), 497H (Honors Directed Study) or 500 and 502.

(2) Maintain a minimum overall grade-point average of 3.00.

(3) Complete all other requirements for a major in economics in the College of Arts and Sciences.

Graduate Programs

Graduate Program Adviser

Judith Ann Thornton
301B Guthrie Hall

The student's academic record must indicate a likelihood of success in the program. More important than the overall grade-point average is the nature of the courses taken, and the grades in areas where analytical skills are required. An undergraduate economics major is *not* required. Students must take the verbal and quantitative sections of the Graduate Record Examination. A beginning graduate student with a four-year degree (B.A., B.S., etc.), but with little training in economics, should expect to take Economics 300 and 301 and other preliminary work in each field selected as is deemed necessary to begin graduate work in that field.

Students may be allowed to substitute equivalent graduate work taken at other institutions for part of the course requirements. Students should consult the



Graduate Study section for details of regulations concerning residence.

PROGRAMS OF STUDY

The Department of Economics offers courses leading to the degrees of Master of Arts and Doctor of Philosophy. Requirements for both advanced degrees include work in the Graduate Core Program of the Department and in some of the following fields of specialization: (1) comparative economic development, (2) economic history, (3) mathematical economics, (4) government regulation, industrial organization, and natural resources, (5) international trade, (6) labor economics, (7) public finance, and (8) statistics and econometrics.

Master of Arts: Economics Major

Requirements for the Master of Arts degree may be satisfied in two ways. The nonthesis option requires twelve courses, including Economics 410 (if the student has not had a course in calculus) and the four theory courses (Economics 500, 501, 502, and 503). A "B" average must be maintained in price theory and macroeconomics, and in all economics courses. A student may substitute three courses from outside the Economics Department subject to approval of the graduate adviser. No field or foreign language examination is required.

The thesis option substitutes a thesis for three of the above courses outside the core courses.

Master of Arts: Economics Minor

The requirement for a master's degree with a minor in economics is 8 credits in economics courses numbered 400 and 500.

Doctor of Philosophy: Economics

Prospective candidates must complete the Graduate Core Program consisting of: (a) theory (Economics 500, 501, 502, and 503); (b) mathematics (Economics 410, 411, 412); (c) statistics (Economics 481, 482). A satisfactory grade must be achieved on two Core examinations covering micro-economic and macro-economic theory.

Prospective Ph.D. candidates must pass a major field examination covering all or approved parts of the material in one of the eight fields offered by the Department. In addition, a distribution requirement must also be completed, consisting of four 500-level courses in at least three minor fields other than the student's major field, and four other graduate courses also outside his major field.

Through the cooperation of the Institute for Comparative and Foreign Area Studies, a student may offer an

Institute Regional Study program as a substitute for part of the distribution requirement. The department may also accept work in other fields outside economics as satisfying part of this requirement.

The student must complete and orally defend a doctoral dissertation. In the case of an Institute Regional Study program, the student may choose a dissertation subject related to his specialty and have the dissertation jointly supervised by the Institute for Comparative and Foreign Area Studies and the Department of Economics.

Doctor of Philosophy: Economics Minor

Doctoral students offering a minor in economics must pass the Core examinations in micro-economic and macro-economic theory, and must take at least one graduate-level field course in economics.

Doctor of Philosophy: Field of Business Administration

Prospective candidates for the degree of Doctor of Philosophy in the field of Business Administration who elect to offer a field in economics will normally be required to pass the Core examinations in micro-economic and macro-economic theory, and to take at least one graduate-level course in economics.

ENGLISH

Chairman

Robert D. Stevick
A101B Padelford Hall

Professors

Robert P. Adams, Edward Alexander, Edward E. Bossetter, Malcolm J. Brown, Wayne Burns, E. Harold Eby (emeritus), Donald W. Emery, David C. Fowler, Donna L. Gerstenberger, Markham Harris, Robert B. Heilman, Andrew R. Hilen, Jr., William F. Irmscher, Frank W. Jones, Helen A. Kaufman (emeritus), Jacob Korg, Jane S. Lawson (emeritus), William H. Matchett, Robert O. Payne, Angelo M. Pellegrini, Roger H. Sale, Harold P. Simonson, Arnold Stein, Robert D. Stevick, T. Brents Stirling (emeritus), E. Ayers Taylor (emeritus), David Wagoner, Frank Joseph Warnke, Sophus K. Winther (emeritus), Lawrence J. Zillman

Associate Professors

Martha Banta, G. Nelson Bentley, Harry H. Burns (emeritus), Margaret R. Duckett (emeritus), Richard J. Dunn, Garland O. Ethel (emeritus), Florence J. Gould (emeritus), Glenn W. Hatfield, Robert N. Hudspeth, Donald M. Kartiganer, Eric LaGuardia, J. David McCracken, Arthur K. Oberg, Henry A. Person (emeritus), William L. Phillips, Otto Reinert, Robert P. Shulman, Eugene H. Smith, Robert B. Stanton, Margaret

C. Walters (emeritus), Eugene Webb, William O. Willeford, Jr., Elinor M. Yaggy

Assistant Professors

Richard E. Abrams, Sylvia F. Anderson (emeritus), Richard E. Baldwin, Kathleen A. Blake, Richard A. Blessing, Gerald J. Brenner, Joseph M. Butwin, Jack A. Cady, Gerard H. Cox III, William M. Dunlop, Alan S. Fisher, Lawrence D. Frank, Charles H. Frey, John W. Griffith, Malcolm A. Griffith, Muriel L. Guberlet (emeritus), Lois P. Hudson, Jean S. Hundley, Sydney J. Kaplan, Frank J. Kearful, Bertha M. Kuhn (emeritus), David E. Llorens, Thomas F. Lockwood, Michael L. Magie, Richard L. McGuire, Robert L. Mortenson, Leonard N. Neufeldt, Martha J. Nix (emeritus), Delores J. Palomo, Kenneth A. Requa, Viola K. Rivenburgh (emeritus), William I. Siegmund, Larry J. Swingle, Charles A. Watkins

Lecturers

Dorothee N. Bowie, Lois G. Clemens, Joyce B. Mobley, Leota S. Willis (emeritus)

Associate

Patricia A. Fisher

The Department of English offers courses leading to the degrees of Bachelor of Arts, Master of Arts, Master of Arts for Teachers, and Doctor of Philosophy. Certain Comparative Literature courses may be taken for credit toward degrees in English.

The Department of English teaches elementary composition, advanced composition of various kinds, English literature, American literature, and, in the Comparative Literature courses, some of the literature of other countries. In recent years the Department has won distinction in poetry; the faculty includes several practicing poets, and various graduates of the poetry courses have gained recognition. English and American literature together make up one of the great bodies of material in the humanities, and they are taught, with considerable variety, by a staff that includes widely known scholars and critics.

Undergraduate Programs

Advisers

Dorothee N. Bowie, Shelby Ann Pukas
A2B Padelford Hall
A106 Padelford Hall

For undergraduate students, the Department provides two elective curricula leading to the Bachelor of Arts degree, one in language and literature, the other in composition and advanced writing. In addition, it offers major and minor academic fields for prospective teachers on the secondary level and a major academic field

for prospective teachers on the elementary level; see *College of Education* section.

GRADUATION REQUIREMENTS

Bachelor of Arts

Curriculum in Language and Literature

At least 50 credits in English are required. Courses must include 264 and 265 or 266 or 267; any two courses from 324, 325, 326; three period courses in the 300 group (for the student taking 264 and 265, these are to include one course in the 341-347 group and one course in the 361-363 group; for the student taking 264 and 266, these are to include one course in the 331-337 group and one in the 361-363 group; for the student taking 264 and 267, these are to include one course in the 331-337 group and one course in the 341-347 group); two courses at the 400 level in literature (no more than 5 credits in the 430 group may count toward the major); and one 5-credit upper-division elective. Election of one of the following is recommended to majors: 387, 447, one advanced writing course.

Curriculum in Composition and Advanced Writing

At least 55 credits in English are required. Courses must include: any two courses from the 264-267 group; 324; two period courses at the 300 level (one in a period other than those covered by the courses chosen from the 264-267 group); two literature courses at the 400 level (including 417 or 418 or 419); 20 credits in advanced writing courses (15 credits must be in upper-division courses in at least two forms; e.g., short story, novel, drama, poetry, expository writing). A more detailed statement of requirements is available at the English Advisory Office, and should be secured by all students majoring in English.

Honors in English

Adviser

Donna L. Gerstenberger
A104 Padelford Hall

Members of the College Honors Program who fulfill the requirements of that program during the freshman and sophomore years and complete the departmental honors requirements below receive a bachelor's degree "With College Honors in English." Superior students who are not members of the College Program may participate in the departmental honors curriculum and receive a bachelor's degree "With Distinction in English."

Students can qualify for honors work at all levels. Freshmen may be eligible for special sections in Freshman English. Freshmen and sophomores may apply for the College Honors Program and, if admitted, take special sections of the Masterpieces courses (264H,



265H, 266H, 267H). Students entering the departmental program from the College Program should have a 3.00 grade-point average overall and a 3.50 grade-point average in English. Other superior students are selected for the departmental program in the third quarter of the sophomore year or the first quarter of the junior year and usually have averages of 3.00 overall and 3.50 in English.

Juniors and seniors in both programs take 15 of the 50 credits required for the major in courses especially designed for honor students. A total of 5 credits will be in supervised independent study (492H), with individual conferences and honors thesis; 10 credits will be in seminars on special subjects not offered as part of the regular curriculum (499H). Each seminar will have approximately 15 students.

Honors sections of Freshman English are available to those students who qualify on the basis of their performance in the English portion of the Washington Pre-College Testing Program or the Advanced Placement Examination of the College Entrance Examination Board.

Graduate Programs

Graduate Program Adviser
Andrew R. Hilen, Jr.
A105 Padelford Hall

The purpose of graduate work in English is the acquisition of a body of learning and the development of critical skills and standards of judgment. Though having central objectives identical to all, the graduate English program can provide a background for different professional pursuits: some students may look forward to careers as scholars and college teachers; others to positions in the secondary school system; and still others to work in the fields of professional writing, editing, and publishing. The Department of English has sought, therefore, to keep its general requirements for advanced degrees sufficiently broad and flexible to permit the following emphases in courses and dissertations: classification and analysis of literary works in their historical context; theories of criticism, and the analysis and evaluation of literary works; descriptive and historical analysis of the language from Old English to the present; projects in imaginative writing, supported by courses in criticism and literary periods and types (for the Master of Arts only).

The graduate program is organized so as to permit completion of the master's degree in one calendar year, and the Ph.D. degree in three additional years (beyond the master's). In a typical four-year program, the student is encouraged to complete his course requirements

(normally 60 credits) during the first two years, the General Examination for the Ph.D. in the third year, and the dissertation in the fourth year.

Each student's program will be planned in consultation with a graduate adviser in the Department and will emphasize his particular interests and abilities.

PROGRAMS OF STUDY

Students pursuing programs of study toward advanced degrees in English must present an undergraduate English major equivalent to that at the University of Washington, which requires 50 quarter credits.

Master of Arts

For the Master of Arts degree, a minimum of 35 credits is required, of which 25 must be in courses numbered 500 or above. Of these, 10 credits may be in courses in other departments. A maximum of 5 quarter transfer graduate credits may be accepted if taken while a graduate student in another recognized graduate school.

The student must show a reading knowledge of an approved foreign language before he is admitted to the Graduate Program. He must pass a written examination on four fields chosen by him in consultation with the chairman of graduate programs.

In the advanced creative writing program, the student must complete 35 credits, not more than 15 of which may be in advanced writing courses, and present, in addition, a piece of original imaginative writing (thesis, 10 credits).

Master of Arts for Teachers

A minimum of 39 or 40 credits is required, of which 24 or 25 must be in courses numbered 500 or above. English 535, 553, and 580 (or their equivalents) are required. In addition, each prospective candidate must present a concentration of three related courses (e.g., in criticism, literature, language, rhetoric or advanced writing, or courses outside the Department, subject to approval, not to exceed 15 credits). A maximum of 5 quarter credits may be transferred from an accredited institution.

The student must show a reading knowledge of one foreign language before he is admitted to the Graduate Program. The language chosen must be (a) relevant to the program of the student and (b) approved by the Graduate Studies Committee and the Graduate School if other than Latin, French, or German. The final examination for the M.A.T. will be adapted in each case to the experience, program, and record of the student.

Doctor of Philosophy

Admission to the Ph.D. program is granted only upon

petition to the Graduate Studies Committee after the completion of a minimum of 30 credits of graduate course work. Teaching experience is required of all students as a part of the Ph.D. program. Students may meet this requirement by working as teaching assistants in the Department, or by gaining teaching experience elsewhere. A student pursuing a program of study toward the Ph.D. must complete a minimum of 60 credits in course work (of which 50 must be at the 500 or 600 level) before taking his General Examinations. As many as 15 credits may be in approved courses in other departments. English 505, 530, and 531 are required. Any credits accepted from another institution (not more than 30) must be from another recognized graduate school and are subject to review by the Graduate Studies Committee.

Before he is admitted to the Ph.D. program, a student must show a reading knowledge of two foreign languages (usually Latin or French, and German—though, upon approval of the Graduate Studies Committee and the Dean of the Graduate School, appropriate substitutes may be accepted).

The General Examination (not given during Summer Quarter) is based on the assumption that the student's reading and study have prepared him for the following: a preliminary written examination testing the student's knowledge of two of the six major literary fields; satisfactory completion of an advanced seminar in two other fields, and an oral examination in the field of his specialization plus one other field. A student electing a major (or minor) in English language may substitute this field for one of the literary periods.

As soon as possible after he has passed his General Examination, which admits him to candidacy, the Candidate must submit for the approval of the Graduate Studies Committee a statement of the subject of his dissertation. On the basis of this statement, a dissertation committee will be recommended to the Dean of the Graduate School. The student must pass an oral Final Examination devoted to the dissertation and to the field with which it is concerned.

A more complete description of the graduate programs in English is contained in a departmental brochure.

Minors in English

The requirement for a minor in English for a master's degree is 20 credits in undergraduate and graduate work combined, plus 10 credits in graduate courses earned in residence.

The requirement for a minor in English for the doctor's degree is 20 credits in undergraduate and graduate work

combined, plus 20 credits in graduate courses. At least half the credits must be in courses numbered 500 or above and at least 10 must be earned in residence.

GENERAL STUDIES

For the program offered under General Studies, see *Interdepartmental Programs* section.

GENETICS

Chairman and Graduate Program Adviser
Herschel L. Roman
J205 Biochemistry-Genetics Building

Professors

August H. Doermann, Howard C. Douglas, Jonathan A. Gallant, Stanley M. Gartler, Benjamin D. Hall, Brian J. McCarthy, Arno G. Motulsky, Herschel L. Roman, Laurence M. Sandler, David B. Stadler

Associate Professors

Philip J. Fialkow, Leland H. Hartwell, Eugene W. Nester, Reinhard F. Stettler

Adjunct Associate Professor

Charles D. Laird

Assistant Professors

Arnold J. Bendich, Breck E. Byers, Walton L. Fangman, Joseph Felsenstein, Elton T. Young

Research Associate Professor

Donald C. Hawthorne

The Department of Genetics offers graduate programs leading to the degrees of Master of Science and Doctor of Philosophy. In addition, courses are given by the Department for undergraduates majoring in the biological sciences and in related areas. The Department does not offer an undergraduate major in genetics. However, it is suggested that students who foresee the possibility of graduate work in genetics consult with the Chairman of the Department concerning an undergraduate curriculum best suited for this purpose.

GEOGRAPHY

Chairman

John C. Sherman
406 Smith Hall

Professors

G. Donald Hudson (emeritus), W. A. Douglas Jackson, Marion E. Marts, Richard L. Morrill, John C. Sherman, Morgan D. Thomas, Edward L. Ullman

Associate Professors

Ronald R. Boyce, Kuei-sheng Chang, Willis R. Heath, George H. Kakiuchi, Günter Krumme, Joseph Velikonja

**Assistant Professors**

William B. Beyers, Jack J. Eichenbaum, Douglas K. Fleming, Phillip C. Muehrcke, Jacek I. Romanowski

Geography is the study of the distribution of man and his works on the earth—the location of activities and the development of regions. Some of the topics studied both systematically and in regional combination are: the location of industries and cities and their support, urban patterns, agricultural regions, transport flows and facilities, trade areas, political units, natural resources and land use, and the expression of these characteristics in cartographic form. Basic to geography is the development of theories of spatial location and interaction in order to interpret the order on the earth's surface and to aid in understanding and prediction.

The Department of Geography offers programs of study leading to the degrees of Bachelor of Arts, Master of Arts, and Doctor of Philosophy. In addition, the Department offers major and minor academic fields for students in the College of Education. (See *College of Education* section.)

Undergraduate Programs**Adviser**

Jacek I. Romanowski
404B Smith Hall

The program each student follows, including 50 credits in geography, is developed jointly by himself and the departmental adviser. The primary objective is to serve the student's broad intellectual interests in geography and in other fields including those allied to geography. The undergraduate program also prepares the student for professional training appropriate to advanced degrees. A secondary objective is to prepare those students who plan careers in cartography.

Bachelor of Arts

The general pattern of programs leading to the Bachelor of Arts degree is: (1) Geography 100; three courses on the 200 level including Geography 207; three courses on the 300 level (Geography 360, one systematic and one regional); and three courses on the 400 level (two systematic and one regional); and (2) a minimum of three courses in two fields related to geography, mainly the social sciences, earth sciences, or mathematics.

Graduate Programs**Graduate Program Adviser**

G. H. Kakiuchi
404B Smith Hall

PROGRAMS OF STUDY

Programs of study leading to the degrees of Master of

Arts and Doctor of Philosophy are developed jointly by each student and the Graduate Program Adviser. These programs are flexible, each taking into account the student's preparation, professional objectives, and scholarly interests. Within this framework, the Department offers some areas of special competence:

Urban, Transportation, and Industrial Geography; Regional Development and Theory and Method in Economic Geography; Social and Political Geography; Resource Conservation and Use; The Geography of the Far East, especially China and Japan, and the Soviet Union and Eastern and Western Europe; Cartography; and Quantitative Methods.

Graduate students are expected to acquire competence in fields allied to their center of interest. These include, for example, competence in economic theory, mathematics, and statistics, an appropriate foreign language such as Russian or a Far Eastern language, and an appropriate social science.

Advantage is made of close relationships with other units within the University. These include the Institute for Comparative and Foreign Area Studies, the Center for Urban and Regional Research, the Graduate School of Public Affairs, the Transportation Research Group, and the Bureau of Community Development.

Doctoral students who wish to specialize in the geography of the Soviet Union or Eastern Europe, China, Japan, or other areas which are represented in the Department of Geography and the Institute for Comparative and Foreign Area Studies must take courses relevant to the individual's area of interest in at least three fields. One of these fields must include a graduate seminar. A working knowledge of the language(s) appropriate to the individual's area of interest must be attained. Programs of study in the Department will be arranged in cooperation with the faculty in the Institute for Comparative and Foreign Area Studies.

Courses and seminars pertinent to graduate study in the Department are offered in other departments of the College of Arts and Sciences and in professional schools or colleges such as Business Administration and Engineering. With regard to the Far East and the Soviet Union, opportunities for studies supplementary to geography are unique. Representative fields are history, economics, and political science. Language instruction includes Chinese, Japanese, Korean, Mongolian, Tibetan, Turkic, Russian, and other Asiatic and Slavic languages.

In economic geography, pertinent offerings are available in such fields as economics, political science,

sociology, mathematics, civil engineering (transportation, data processing), and urban planning. Training in cartography draws on instruction in mathematics, civil engineering (photogrammetry, geodesy, data processing), sociology, psychology, and art.

Admission, residence credit, and other requirements for the Master of Arts degree and the degree of Doctor of Philosophy are set forth in the *Graduate Study* section of this catalog.

GEOLOGICAL SCIENCES

Chairman

John T. Whetten
57 Johnson Hall

Associate Chairman

Bates McKee
46 Johnson Hall

Professors

Julian D. Barksdale, Robert C. Bostrom, Howard A. Coombs, Bernard W. Evans, George E. Goodspeed (emeritus), V. Standish Mallory, Mark F. Meier, Peter H. Misch, Stephen C. Porter, Minze Stuiver, A. Lincoln Washburn, Harry F. Wheeler

Associate Professors

Eric S. Cheney, Nikolas I. Christensen, Randall L. Gresens, Bates McKee, Joseph A. Vance, John T. Whetten

Assistant Professors

James C. Kelley, I. Stewart McCallum, John M. Rensberger, Richard J. Stewart

Research Assistant Professor

Richard R. Green

Lecturer

Larry G. Hanson

Geological Sciences is the study of the earth—an organized body of knowledge about the globe on which we live. The geologist is concerned with the earth in terms of materials which compose it, the nature of its interior, the shape of its surface, the natural processes acting upon it, and its history. The historical aspect sets it apart most distinctly from other physical sciences.

Geologists as a group are engaged in research and teaching at universities, research with governmental agencies, research with petroleum and mining companies, the successful planning and construction of modern engineering structures, and in the discovery and exploitation of petroleum and mineral resources.

A basic knowledge of chemistry, physics, and mathematics is fundamental to the study of geologic phe-

nomena. Botany and zoology are essential to the study of fossil plants and animals. Geology thus involves the application of all science and scientific methods in the study of the earth and its resources.

The Department of Geological Sciences offers programs leading to the degrees of Bachelor of Science, Master of Science, and Doctor of Philosophy. In addition, the Department offers major and minor academic fields for students in the College of Education; see the *College of Education* section.

Undergraduate Programs

Adviser

Julian D. Barksdale
150 Johnson Hall

GRADUATION REQUIREMENTS

Bachelor of Science

Candidates must meet the requirements of the College of Arts and Sciences and complete the following: Chemistry 140, 150, 151, 160; Physics 114, 115, 116, or 121, 122, 123; Mathematics 124, 125, 126; Geological Sciences 301, 311, 320, 321, 341, 361 *plus* sufficient geological electives to bring the total to 50 credits. These requirements are minimal and, depending upon his interests, the student will, in consultation with his adviser, select additional electives from geological sciences, biology, botany, zoology, 200-level engineering, chemistry, physics, and mathematics courses beyond the level of the specified core.

Graduate Programs

Graduate Program Adviser

Joseph A. Vance
146 Johnson Hall

Students who intend to work toward advanced degrees must meet the requirements of the Graduate School as outlined in the *Graduate Study* section. All prospective candidates for advanced degrees in geological sciences must have completed essentially the same academic work as outlined in one of the Bachelor of Science options. There is no formal foreign language requirement.

PROGRAMS OF STUDY

All students must present an approved field course such as 401-402 or other field experience which is approved by the Department. All graduate students take a departmental qualifying examination during their third or fourth quarter of residence.

Master of Science

A thesis or research paper demonstrating original and independent research in a limited area is required of all master's degree students. For the thesis program a



minimum of 36 credits in courses numbered 400 or above are required; 18 of these must be in courses numbered 500 or above, and up to 9 may be for thesis (Geological Sciences 700). In the nonthesis program a minimum of 45 credits must be earned. At least 18 credits must be in courses numbered 500 or above and these must include a 5-credit research paper (Geological Sciences 600). No more than 9 credits in field geology may be applied toward a master's degree.

Doctor of Philosophy

All prospective candidates must have either an M.S. or M.A. degree. There are no specific credit requirements for the doctoral degree beyond those of the residence requirements of the Graduate School. The number of credits will vary with the student's preparation and the courses will be determined in consultation initially with the Graduate Program Adviser and later with the student's Research Supervisor and Supervisory Committee. The Ph.D. General Examinations are administered by a Supervisory Committee appointed by the Dean of the Graduate School and, when successfully passed, signify admission to candidacy.

GERMANIC LANGUAGES AND LITERATURE

Chairman

William H. Rey
340 Denny Hall

Professors

Ernst Behler, Antonin Hruby, William H. Rey

Associate Professors

George C. Buck, Gunter H. Hertling, Herman C. Meyer (emeritus), Annemarie M. Sauerlander (emeritus), Joseph B. Voyles, Richard F. Wilkie

Assistant Professors

Francis X. Allard, Howard Altman, Hellmut Ammerlahn, Felice Ankele (emeritus), Charles M. Barrack, Diana E. Behler, Willi W. Fischer, Alan Galt, Sammy McLean, Horst Rabura, Marie-Luise Sacks South, Heinke Thomsen, Elenora M. Wesner (emeritus)

Lecturer

Elsa W. Sherwin (emeritus)

The educational purpose of this department is the instruction of German language, linguistics, literature, and civilization. Therefore, the departmental program offers courses in each of these fields. Particular emphasis is given to present-day Germany, its history, literature, philosophy, and their role in western civilization.

The departmental curriculum is designed to fit the needs not only of German majors and minors in the

College of Arts and Sciences, but also of students in the College of Education who plan to teach German on the various school levels. (See *College of Education* section.) Furthermore, this department is prepared to accommodate nonmajors according to their fields of interest and thus offers two tracks of instruction on the lower-division level.

Track I (German 101-103 and 201-203) attempts a balanced approach to the teaching of all four skills (comprehending, reading, speaking, writing).

The program of Track II (German 111-113 and 211-213) is designed to fit the needs of those students who do not wish to major in German but who take an active interest in German civilization in general or German science in particular. Here the primary objective is acquirement of a reading knowledge of German that will allow the student to familiarize himself with German publications in his own field. Special courses (German 260 and 261) in scientific German cater to the student in the natural sciences. Thus, the second and third quarter of second-year German allows the student to avail himself of one of three opportunities—to acquire an active knowledge of German, to concentrate on a reading knowledge of German, or to specialize in scientific German.

In order to give nonmajors access to German culture and civilization, courses in English translation on the 300 level have been introduced. These courses are devoted to representative figures of German literature and thought such as Nietzsche, Kafka, Hesse, Brecht. Their relevance for significant problems of our own time is emphasized.

The department offers programs leading to the degrees of Bachelor of Arts, Master of Arts, Doctor of Philosophy, and Doctor of Arts.

For students in General Studies, the Department offers a program with emphasis on German civilization.

Students who have studied German in high school are placed in first- or second-year courses according to the level of their achievement in high school work, which is measured by their performance on placement examinations.

Undergraduate Programs

Adviser

Charles M. Barrack
347 Denny Hall

GRADUATION REQUIREMENTS

Bachelor of Arts

In this curriculum, 45 credits are required for the major. First- and second-year German courses and

courses in scientific German and education are not counted toward the major.

Upper-division courses emphasize conversation and composition with a series in each year (301, 302, 303, 401, 402, 403 [3 credits each]). In addition, the sequence in literature (310, 311, 312 [3 credits each]) introduces juniors to the study of contemporary German literature, the German novella of the nineteenth century, Goethe's *Faust* (I), and a selection of his poetry. This is followed in the senior year by the sequence 410, 411, 412, which is devoted to modern German literature and culture, and by 413, 414, 415, dealing with the older period and the eighteenth century.

The following courses are required for a major in German: 301, 302, 303, 310, 311, 312, 401, 402, and 413 or 414. The total number of prescribed credits is 27. The rest of the 45 credits can be taken from the following courses: 403, 404, 405, 410, 411, 412, 414 or 413 (see requirements), 415, 490, 491, 492, 495, and one course in English translation (German 340 series). A grade of C or better must be earned in each of these upper-division courses. A 2.50 grade-point average is required in German courses beyond the second year.

Honors in Germanics

Adviser

Diana Behler

337 Denny Hall

The Department of Germanic Languages and Literature offers an honors program in the third and fourth years. Honors sections are available in 301, 302, 303, 310, 311, 312, 401, 402, 403; furthermore, honors students can be accommodated in German 490, 491, and 492.

Members of the College of Arts and Sciences Honors Program who fulfill the requirements of that program during the freshman and sophomore years, in addition to the following departmental honors requirements, are eligible to receive a bachelor's degree "With College Honors in German." With the approval of the departmental honors committee, superior students who are not members of the College Honors Program may participate in the departmental honors curriculum and receive a bachelor's degree "With Distinction in German." Departmental honors requirements are: (1) a cumulative grade-point average of 3.00 and a grade-point average of 3.50 in German courses; (2) a minimum of 20 credits in upper-division German honors courses; and (3) a senior thesis developed in the senior honors colloquium.

Graduate Programs

Graduate Program Advisers

Sammy McLean, Ph.D. Program

345 Denny Hall

Horst M. Rabura, D. A. Program

340A Denny Hall

Admission

Students who intend to work toward advanced degrees must meet the requirements of the Graduate School. Prospective candidates for advanced degrees in Germanics must have the equivalent of an undergraduate major in German.

PROGRAMS OF STUDY

Master of Arts

This department offers two one-year programs leading to the M.A. degree. Program I demands a high specialization of the student in either literature or philology and thus serves as a preparation for the study towards the Ph.D. degree. Program II, on the other hand, provides the participants with a broad background in all fields pertinent to the teaching not only of the German language but also of German civilization on the junior college and college levels. It also serves as preparation for the D.A. Program. Requirements for the two programs are similar. Students must earn 36 credits and must write two term papers in lieu of a thesis. At the end of the M.A. year, the student must pass a written comprehensive examination. Participants in the M.A. I Program may minor in another department. In this case, 24 credits in German must be earned and the number of credits to be acquired for the minor is to be determined by the department concerned.

M.A. Program I is designed for three quarters and consists of a compact schedule of courses, which are repeated every year. The courses are carefully coordinated with the upper-division program so that the junior, senior, and M.A. year form a well-integrated unit. Under this comprehensive study plan, a student with a major in German will normally obtain his M.A. degree three years after attaining the upper-division level. The courses in the modern field are devoted to Lessing (531), Schiller (538), Goethe I, II (534, 535), Romanticism (515), Nineteenth-Century Drama (516), Nineteenth-Century Prose (517), Twentieth-Century Literature (518), and Contemporary German Literature (520). They are complemented by courses in Middle High German (556) and Middle High German Literature I (557), Bibliography (501), and Linguistic Analysis of German (405). In Program II, the 36 required credits are to be earned in stylistics, in linguistics, in methods of language and literature instruction, and in German civilization. The civilization



courses present German literature from the eighteenth century to the twentieth century within the context of that country's political, social, and cultural developments. The equivalent of M.A. Program II is also offered as a rotating summer program designed mainly for the needs of high school teachers. Its requirements can be fulfilled in three consecutive summers.

In exceptional cases, advanced students who have taken courses of the M.A. program before their graduation may receive permission from the head of the Department to obtain at least 9 of the 36 required credits by writing a thesis, which should give proof of their superior experience and qualifications.

For a minor in Germanics, a minimum of 12 credits in advanced graduate courses is required. The student must have the equivalent of a baccalaureate degree in German at this University.

Doctor of Philosophy

For a major in Germanics, the student must complete all of the stated requirements of the Graduate School, pursue his studies for at least three graduate years, pass General Examinations on the field, and submit a satisfactory dissertation which demonstrates a mastery of scholarly procedure and is an acceptable contribution to knowledge. The student must complete a minimum of 90 credits in course work after admission to the Graduate School (54 credits beyond the M.A.) before taking his General Examinations. If he minors in another department, he may elect a minimum of 36 credits in Germanics. If his entire program lies within the field of Germanics, he must elect 36 credits in modern literature (since 1500) and 18 credits in philology and the older literature or vice versa. The General Examinations, which are both written and oral, will not be confined to courses taken at the University or elsewhere, but will endeavor to demonstrate the student's breadth of knowledge, which he has acquired by independent reading and study. His intensive training in areas of special interest and his abilities in critical evaluation will also be tested.

For a minor in Germanics, a minimum of 18 credits in advanced graduate courses is required. The student must have the equivalent of a baccalaureate degree in German at this University.

Doctor of Arts

Whereas the traditional doctoral program serves the needs of the future professor at the universities and colleges, stressing scholarship and research, the Doctor of Arts program is designed with a primary stress on pedagogy, to give the future teacher at two-year and four-year colleges, an adequate preparation for his job.

Credit and examination requirements for both doctoral programs are identical; however, the D.A. program emphasizes breadth of knowledge, pedagogical excellence, and relevance of classroom presentation rather than specialized research. The curriculum is organized on an interdepartmental basis. Of the required 54 credits, 36 must be earned in courses in German literature and civilization. The student may earn the remaining 18 credits in the fields of education, history, philosophy, or anthropology, according to his own interests and background, with the guidance of the departmental adviser. In this program the dissertation is likely to be a combination of literary, historical, and educational topics. In addition to the above mentioned requirements, the candidate for this degree is required to participate in an internship program usually consisting of two quarters. During this internship the student will receive experience in the teaching of German language and literature on the upper-division level as well as in curriculum development and other problems of departmental administration.

HISTORY

Chairman

Otis A. Pease
308 Smith Hall

Professors

Dauril Alden, Arthur Bestor, Imre Boba, Robert E. Burke, Robert J. C. Butow, Vernon Carstensen, Giovanni Costigan, Edith Dobie (emeritus), Herbert J. Ellison, Gordon Griffiths, W. Stull Holt (emeritus), Howard Kaminsky, Solomon Katz, Otis A. Pease, David H. Pinkney, Thomas J. Pressly, Max Saville (emeritus), Peter Sugar, Marc Szeftel (emeritus), Donald W. Treadgold

Associate Professors

Aldon D. Bell, Jon M. Bridgman, Jack L. Dull, Donald E. Emerson, Arther L. Ferrill, Wilton B. Fowler, Thomas L. Hankins, Fred J. Levy, Scott H. Lytle, Kenneth B. Pyle, Lewis O. Saum, Carl E. Solberg, Carol G. Thomas, Joan C. Ullman

Assistant Professors

Jere L. Bacharach, Frank F. Conlon, Lancelot L. Farrar, Jr., Jack M. Holl, Rodney W. Kilcup, Paul H. Mosher, Robert F. Scholz

History is a discipline requiring the study of human affairs at many different periods of time and in various parts of the world. It is significant not only for those preparing for a professional career in law or government or teaching, but also for those who wish a deeper comprehension of world affairs and an understanding of events.

Nihil humanum alienum. There is no human activity which is not a proper subject for the historian. It is the nature of the evidence rather than its subject which has provided the traditional boundary to "history." Most historians have limited themselves to the evidence of the written record, though they have been forced to recognize that there are vast ranges of the human past and present which must be elucidated by other kinds of evidence, by methods which their colleagues in the other social sciences have succeeded in developing.

The study of history may be useful to the person preparing for a career in law or government or teaching, but its chief claim to a place in the curriculum rests upon the hope that the person who studies it may gain in his capacity to see himself in relation to his society, and his own society in historical perspective.

The Department of History offers courses leading to the degrees of Bachelor of Arts, Master of Arts, and Doctor of Philosophy. History majors in the College of Arts and Sciences who qualify for the Teacher Education Program may take the courses in the College of Education required for the teaching certificate. In addition, the Department of History offers major and minor academic fields for secondary education majors, and a major academic field for elementary education majors in the College of Education. See the *College of Education* section.

Undergraduate Programs

Advisers

308C Smith Hall

The undergraduate majoring in history will be encouraged, with the help of an adviser, to plan a program of history courses providing both depth and breadth—an intensive exploration of one country, region, or period combined with an extensive introduction to other countries, regions, and periods, and a study of the appropriate foreign languages. He should take course work in the other social sciences and in the humanities that are best suited to provide perspective suggested by his own developing interests.

GRADUATION REQUIREMENTS

Bachelor of Arts

For a Bachelor of Arts degree, 50 credits in history are required, with the exception of those students who are working for honors in history who need 60 credits. Courses must include HST 111, 112, 113, or the equivalent in the more advanced courses; any 5-credit course in United States history; and at least 25 credits in upper-division history courses.

Students who plan to undertake graduate work in history should begin to acquire a reading knowledge of foreign languages, especially French and German.

Honors In History

Advisory Office

308C Smith

The Department of History offers honors sections in General History (HST) 111, 112, 113; in Ancient and Medieval History (HSTAM) 201, 202; a sophomore honors course, General History (HST) 299H, and two honors sequences open only to juniors and seniors, General History (HST) 391H-392H and 491H-492H, both involving a special essay. General History (HST) 491H-492H and the honors sections in the lower-division courses are open to any member in good standing in the College of Arts and Sciences Honors Program and to other superior students with permission of the instructor. All applicants for General History (HST) 391H-392H must obtain permission of the instructor.

There are two forms of honors degrees. Students enrolled in the College Honors Program become candidates for the bachelor's degree "With College Honors in History." Other qualified students may participate in the departmental honors program and become candidates for the bachelor's degree "With Distinction in History."

In order to graduate with either honors degree, a student must complete at least one of the two upper-division honors sequences—General History (HST) 391H-392H and General History (HST) 491H-492H, and achieve distinction in the major essay written for it; attain a cumulative grade-point average of 3.00; and complete at least 60 credits in history courses with a grade-point average of 3.30. A member of the College Honors Program must fulfill that program's other requirements as well.

Graduate Programs

Graduate Program Adviser

D. H. Pinkney

204 Smith Hall

The Department offers graduate training leading to the M.A. and Ph.D. degrees in a large number of fields within the discipline. Graduates find careers as college or secondary school teachers or as members of university faculties who combine teaching with scholarship and professional writing. Some find their training appropriate for positions as archivists, librarians, or editors. A few enter government service, college administration, or publishing. The M.A. program is normally completed in three or four full academic



quarters, or their equivalent; the Ph.D. program ordinarily requires three years of full-time work beyond the M.A. Graduate training at both levels features (1) course work or independent study leading to examinations in special historical fields; (2) sustained investigation and interpretation of historical problems in seminars involving the writing of essays and a thesis.

The department specializes in the following broad divisions of graduate study: Ancient; Medieval and Byzantine; Europe, 1450-1789; Europe Since 1789; England; Russia and Eastern Europe; Islam; Expansion of Europe; United States; Latin America; Asia Before 1800; Asia Since 1800; History of Science; Intellectual History and Historiography; Diplomatic History.

Admission to the graduate program requires a sound undergraduate major in history or in one of the basic disciplines related to history completed within a college of liberal arts and sciences. All prospective candidates must demonstrate a reading knowledge of one language in addition to English, and other languages appropriate to the field of specialization. The department also requires evidence of the applicant's ability to write cogently and lucidly and to interpret historical data.

Beginning graduate students may qualify for a very limited number of fellowships and readerships. Students with an M.A. degree or those who expect to receive the M.A. by the time they begin their duties may apply for an appropriate level of teaching assistantship and may, with continued satisfactory scholarly progress, expect reappointment, for a total of three years, provided adequate funds are available. Fourth-year financial assistance is occasionally available.

HOME ECONOMICS

Director

Mary Louise Johnson
201 Raitt Hall

Professors

Mary L. Johnson, Blanche Payne (emeritus), Jennie I. Rowntree (emeritus), Margaret E. Terrell (emeritus)

Associate Professors

Doris J. Brockway, Florence T. Hall, Laura E. McAdams (emeritus), Burness G. Wenberg

Assistant Professors

Moira C. Feeney, Grace G. Granberg, Elsie B. Haff, Doris Katz, Elaine R. Monsen, Bonnie Worthington

Lecturers

Charlene Martinsen, Margaret B. Murdoch, Marguerite Schroeder, Mabel K. Shigaya, Dorothy J. Smith, Carol M. Stone

Instructors

Carolyn Unklesbay, Patricia P. Wilson, Yvonne Yerina

Home economics synthesizes knowledge drawn from its own research, from the physical, biological, and social sciences, and from the arts, and applies this knowledge for the purpose of improving the lives of families and individuals.

The educational objectives of the degree programs in the School of Home Economics are to provide a liberal education, to develop competence and creativeness in extending, applying, and disseminating knowledge related to personal and family living, and to allow sufficient specialization for a student to prepare for a profession or graduate work.

The School of Home Economics offers six curricula leading to the bachelor's degree for students in the College of Arts and Sciences, as well as major and minor academic fields for students in the College of Education (see *College of Education* section). The School also offers courses leading to the degrees of Master of Arts, Master of Science, Master of Arts in Home Economics, and Master of Science in Home Economics.

Special Facilities

The School maintains a Home-Management House in which home economics students gain experience in management.

The School also maintains the Costume and Textile Study Collections on the third floor of Raitt Hall. The collections contain extensive examples of historic and modern costumes and textiles gathered from many areas of the world. They are a rich source of research for graduate and undergraduate students in many disciplines.

Undergraduate Programs

Advisers

Margaret Murdoch
202 Raitt Hall

Patricia Twisselman
202 Raitt Hall

PROGRAMS OF STUDY

Bachelor of Science

Candidates for this degree may choose one of the following:

CURRICULUM IN INSTITUTION ADMINISTRATION

A—Dietetics

The following courses are required for students who plan careers as dietitians or nutritionists: *Home Eco-*

nomics 307, 314, 372, 407, 408, 415, 457, 472, 473, 475, electives (12 credits). *Other:* Accounting 210, 230; Art 109 or 129, or equivalent; Chemistry 140, 150, 151, 231, 232, 241, 242; Economics 200 or equivalent; Educational Curriculum and Instruction 328; Microbiology 301, 302; Zoology 118 and 119 or 208. Students who wish to prepare for a hospital internship must take Biochemistry 405. A bachelor's degree, completion of academic course requirements, and an approved internship are required for American Dietetic Association membership.

B—Executive Housekeeping

This curriculum is designed for students who plan careers as executive housekeepers in hospitals, hotels, or other institutions. A year's internship following this program qualifies the student for membership in the National Executive Housekeepers Association. The following courses are required: *Home Economics* 125, 148, 225, 347, 354, 488, electives (29 credits). *Other:* Accounting 210, 230; Administrative Theory and Organizational Behavior 301 or 460; Microbiology 301, 302; Art 109 or 129; Educational Curriculum and Instruction 328; Chemistry 101, 102 or 140, 150, 231; Physics 114; Mechanical Engineering 418; Economics 200.

CURRICULUM IN NUTRITIONAL SCIENCE AND EXPERIMENTAL FOOD

For students interested in research, graduate study, new product development, quality food control in food industries, consumer education work, and work within the general field of foods and nutrition. The following courses are required: *Home Economics:* 307, 314, 407, 409, 415, 457. *Other:* Biochemistry 405; Chemistry 140, 150, 151, 231, 232, 241, 242; Microbiology 301, 302; Biostatistics 472 or Educational Psychology 490 or Psychology 211 and 212 or Quantitative Science 281; Zoology 208 or Conjoint 316, 317-318.

Bachelor of Arts

Candidates for the Bachelor of Arts degree may choose one of the following:

CURRICULUM IN TEXTILES, CLOTHING, AND ART

This curriculum is designed for students whose primary professional interest is in costume design and construction. The following courses are required: *Home Economics* 125, 134, 225, 234, 334, 432, 433, 434, electives (21 credits). *Other:* Art 105, 106, 109, 129; Anthropology 100; Chemistry 100 or 101 or 140, 150; General History 111 and 112 or Art History 201, 202, and 203; Psychology 100; Sociology 110.

OPTION IN DESIGN FOR APPAREL MANUFACTURING

Open to qualified students who have special aptitude

for designing. Practical experience in factories is required (*Home Economics* 380). Interested students may apply for this option at the end of the second quarter of the junior year. Applicants are selected on the basis of interest in designing as a profession, successful completion of major courses with emphasis on demonstrated ability in design, and adaptability. The following courses are required: *Home Economics* 125, 134, 225, 234, 334, 380, 432, 433, 434, 435, electives (10 credits). *Other:* Art 105, 106, 109; Chemistry 100 or 101 or 140, 150; Economics 200; General History 111 and 112 or Art History 201, 202, and 203; Marketing 301.

CURRICULUM IN HOME ECONOMICS EDUCATION

Students who plan to teach home economics in high schools in the state of Washington must include the following courses to meet the requirements for the Vocational Certificate, as well as those for the Provisional Certificate, Secondary Level (see the *College of Education* section for other requirements for certification). *Home Economics:* 125, 134, 148, 307, 314, 347, 348, 354, 356, either 456, 457, or 483; electives (12 credits). *Education:* Education EDUC 288, 404; Educational Curriculum and Instruction EDC&I 327; Educational Psychology EDPSY 304, 308. *Other:* Art 109 or 129; Chemistry 101 and 102; Economics 200; Microbiology 101 or 301 and 302; Psychology 100; Speech 103 or 203; Zoology 118. A course in vocational education, Educational Curriculum and Instruction EDC&I 404, is required for the Vocational Certificate. See the *College of Education* section for requirements for the fifth year and the Standard General Certificate.

CURRICULUM IN GENERAL HOME ECONOMICS

This curriculum is for students who want a broad home economics background without specialization. The following courses are required: *Home Economics* 125, 134, 148, 307, 314, 347, 348, 354, 356, electives (10 credits). *Other:* Art 109 or 129; Chemistry 101, 102; Economics 200; Microbiology 101 or 301 and 302; Psychology 100, 306, 320; Zoology 118.

Honors in Home Economics

Adviser

Margaret B. Murdoch
202 Raitt Hall

A student may enter the upper-division School of Home Economics Honors Program if she has successfully fulfilled the lower-division requirements of the College of Arts and Sciences Honors Program.

To maintain honors standing in the School, students shall be required to carry a minimum of 14 credits per



quarter and to maintain a minimum grade-point average of 3.00.

To graduate "With College Honors in Home Economics," the student must meet the following requirements:

(1) Complete independent study projects in addition to the regular requirements in three of the following courses: Home Economics 307, 314, 338, 347, 354, 356. A special problems course may be substituted for one of these additional independent study projects. Only upper-division home economics majors in the College of Arts and Sciences Honors Program may register for the honors section of the above courses.

(2) Complete a 6-credit senior thesis in a major area of interest (Home Economics 496H).

In order to provide for curriculum flexibility, College honors students majoring in home economics may substitute 6 senior thesis credits plus other approved credits up to a maximum of 15 for home economics credits usually required in the curriculum they are following. They must, of course, complete a minimum of 50 credits in home economics as required by the College.

Graduate Programs

Graduate Program Adviser

Mary L. Johnson

201 Raitt Hall

PROGRAMS OF STUDY

The School of Home Economics offers courses leading to the degrees of Master of Science, Master of Arts, Master of Science in Home Economics and Master of Arts in Home Economics. Specialization for these degrees may be in the following areas or combinations thereof: foods, nutrition, institution administration, clothing, textiles, home management, home furnishings, family relationships, family economics, and home economics education. The master's degree programs require a minimum of 45 credits including the thesis. At least 30 credits must be taken in home economics. The specific courses required depend upon each student's preparation and interests and will be planned with the Graduate Program Adviser upon admission.

Master of Arts and Master of Science

The Master of Arts or Master of Science degree combines not more than two areas in Home Economics and requires a minor (at least 12 credits). For the Master of Arts degree the minor may be in any field related to home economics. For the Master of Science degree the minor must be in natural science.

Master of Arts in Home Economics and Master of Science in Home Economics

For the degree of Master of Arts in Home Economics or Master of Science in Home Economics, the student may combine a maximum of three related areas in home economics with a maximum of 15 credits in related fields. For the Master of Science in Home Economics at least 6 credits of natural science are required.

Dietetic Internship

The School of Home Economics offers an administrative dietetic internship. Internship courses may apply toward an advanced degree if taken after the student has been admitted to the Graduate School.

All graduate students must meet the requirements of the Graduate School.

INSTITUTE FOR COMPARATIVE AND FOREIGN AREA STUDIES

Acting Director

Donald C. Hellmann

406 Thomson Hall

Associate Director

East and Inner Asia Program

Donald C. Hellmann

414 Thomson Hall

Associate Director

Russia and East Europe Program

W. A. Douglas Jackson

502 Thomson Hall

Associate Director

South Asia Program

Edwin M. Gerow

150 Lewis Hall Annex

(For list of Institute faculty and cooperating faculty, see Foreign Area Studies: Asia, Russia, and East Europe in the *Interdepartmental Programs* section.)

The Institute for Comparative and Foreign Area Studies coordinates undergraduate and graduate instruction and research in East Asia, Russia, East Europe, and South Asia studies, provides special library facilities, and cooperates in research with other institutes in America and abroad.

Programs in East Asia (China, Japan, and Korea), Russia, East Europe, and South Asia foreign area studies leading to the Bachelor of Arts and Master of Arts degrees are offered and supervised by the interdisciplinary groups in the Institute for Comparative and Foreign Area Studies, with the cooperation of the various departments. (*Exception:* The Master of Arts degree in South Asia Regional Studies is still under devel-

opment.) Each program is designed to meet general requirements, as well as to conform to the peculiar needs and problems of a particular field. For descriptions of the undergraduate programs and the interdisciplinary faculty groups that supervise them, see the *Interdepartmental Programs* section on Foreign Area Studies: East Asia, Russia, East Europe, and South Asia. Description of the master's degree programs and the interdisciplinary faculty groups appear in this catalog under the heading "Interdisciplinary Graduate Degree Programs." In departmental programs leading to the doctoral degree, graduate students receive training in their respective disciplines that they apply to their study of East Asia, Russia, East Europe, or South Asia. Such programs are described in the curricular announcements of the respective departments.

The Institute also coordinates other kinds of international studies besides foreign area studies. These include topical, problem-oriented, and comparative approaches on teaching and research that are interdisciplinary and interschool.

The Institute for Comparative and Foreign Area Studies administers the following faculty research seminars: the Modern Chinese History Project; the Modern Japan Seminar; the Inner Asia Project, that deals with Mongolia, Tibet, and Turkestan; the Russian and East European Seminar; and the South Asia Seminar. In each of these research seminars, faculty members from different disciplines meet regularly for discussion and criticism of their individual work. On occasion, graduate students are given the opportunity to participate in the seminars. The Institute has a limited number of teaching and research assistantships that are given to qualified graduate students and, in cooperation with the Graduate School, coordinates the National Defense Language Fellowship Program on East Asia and Inner Asia, Russia and East Europe, and South Asia.

LINGUISTICS

Chairman

Sol Saporta
B5E Padelford

Professors

Lew Micklesen, Sol Saporta

Associate Professor

Heles Contreras

Assistant Professors

Michael Brame, Philip Dale, Carol Eastman, Frederick J. Newmeyer, Harold Schiffman, Larry Selinker, Stamatis Tsitsopoulos

Adjunct Associate Professors

Joseph Cooke, Fred Lukoff, Joseph Voyles

Adjunct Assistant Professor

Michael Shapiro

Adjunct Lecturer

Kenneth Small

Linguistics is the scientific study of language, which is one of the most characteristic forms of human behavior. In contrast to other disciplines concerned with languages, linguistics deals with them from the point of view of their internal structure as systems of communication. Courses provide training in the method and theory of language analysis and description as well as techniques for dealing with language change and genetic relationships.

The University offers upper-division courses in linguistics, providing an introduction to method and theory and a program of studies for graduate students, leading to master's and doctoral degrees in linguistics. The program is administered by the Department of Linguistics in cooperation with various departments.

Undergraduate Programs

No undergraduate degrees are offered in linguistics; however, introductory courses to the nature of language and language learning are available to qualified undergraduates, as are courses in linguistic method and theory for those who wish to acquire a basic knowledge of the field.

This training serves as a valuable adjunct to students majoring in anthropology, English, or another language and literature, mathematics, psychology, or speech, and provides the essential basis for graduate work in general linguistics and related specialties. Courses at the 400 level are available to graduate students who have been unable to acquire equivalent training before beginning graduate work. Undergraduates planning to work for an advanced degree in general linguistics are especially encouraged to complete this training prior to graduation.

For students wishing to take a full complement of work, the following schedule is recommended: junior year, 200 or 400, 201, 451, 452, 453, 461, 462; senior year, 404, 443, 447, 454, 455, 463.

Graduate Programs

Graduate Program Adviser

Sol Saporta
B5E Padelford Hall

In addition to the normal requirements of the Graduate School for admission to study for an advanced degree,



it is recommended that the student admitted to the program in linguistics have completed the equivalent of 45 quarter credits (30 semester credits) of undergraduate college credits in language study. This requirement implies the attainment of proficiency in one language other than English or, in the instance of a non-native speaker of English, a course of study and proficiency in a language other than his native speech. To register for courses, students should consult with the Graduate Program Adviser in Linguistics.

PROGRAMS OF STUDY

Master of Arts

Requirements for the Master of Arts degree are as follows: (1) Familiarity with as many languages as possible; (2) 36 credits, with at least 18 credits in courses numbered 500 or above, including 9 credits for the thesis; (3) successful performance in a comprehensive examination in General Linguistics; (4) completion of a thesis acceptable to the student's committee; (5) attendance at a linguistic institute is strongly recommended.

Doctor of Philosophy

A student may be granted permission to proceed directly for the doctoral degree without an M.A., but the Department reserves the right to require any individual student to present himself as a candidate for the M.A. before accepting him as a prospective candidate for the Ph.D. Requirements for the Ph.D. include 36 credits in linguistics or supporting areas, in lieu of the M.A., plus the following (subject to readjustment by the student's Committee): Linguistics 599; 33 additional credits in linguistics or supporting areas, as approved by the Department; supervised teaching, in lieu of an examination, in first, phonology; second, syntax; third, historical-comparative linguistics; the oral General Examination, and finally, a dissertation suitable for publication and constituting a contribution to knowledge and the Final Examination.

MATHEMATICS

Chairman

Ross A. Beaumont
C138 Padelford Hall

Professors

Carl B. Allendoerfer, Maynard G. Arsove, Ross A. Beaumont, Z. William Birnbaum, Robert M. Blumenthal, Francis H. Brownell III, Douglas G. Chapman (Joint With Fisheries), Harry H. Corson, Caspar R. Curjel, Clyde M. Cramlet (emeritus), Roy Dubisch, Ramesh A. Gangolli, Irving L. Glicksberg, Allen A. Goldstein, Branko Grünbaum, Edwin Hewitt, Peter Hilton, Charles Hobby, James P. Jans, Victor L. Klee,

Gunter Lumer, Lee H. McFarlan (emeritus), Ernest A. Michael, Isaac Namioka, Ronald J. Nunke Carl E. Pearson (Joint With Aeronautics and Astronautics), Robert R. Phelps, Richard S. Pierce, Ronald Pyke, Jack Segal, Roy W. Winger (emeritus)

Associate Professors

Sherwin P. Avann, Lutz Bungart, Edward B. Curtis, David B. Dekker (Joint With Computer Science), Lloyd D. Fisher, Jr., Thomas W. Hungerford, Harold H. Johnson, J. Maurice Kingston, Linda Lumer (acting), Robert T. Moore, Anne C. Morel, Robert W. Ritchie (Joint With Computer Science), R. Tyrrell Rockafellar, Leonard Sarason, Edgar Lee Stout, Robert B. Warfield, Jr., Garth W. Warner, Jr.

Assistant Professors

Yuan-Kwok Chan, Barnett W. Glickfeld, Alfred P. Hallstrom, David Handel, John J. Hirschfelder, David Knudson, George A. Kozlowski, Jr., George S. Monk, James A. Morrow, Vilnis Ozols, David F. Pincus, David L. Ragozin, Galen R. Shorack, Robert T. Smythe, Gomer Thomas, John W. Van Ness, Michael J. Westwater, Kenneth Whyburn, Daniel E. Wulbert

Lecturers

Kathleen B. O'Keefe, Helen C. Zuckerman

Traditionally, mathematics has been the basic language of physical science and engineering, but recently it has also become of major importance for students in social science, business administration, and biological sciences. Mathematics is also an essential element of a liberal education, and students from humanities and the arts are encouraged to broaden their education by enrolling in appropriate courses in the Department. The Department of Mathematics serves the University by offering a wide selection of undergraduate and graduate courses which are organized to meet a great variety of mathematical needs.

Mathematics is also a discipline in its own right, and interesting and profitable careers are open to students who specialize in the subject. In order to prepare students for these careers, the Department offers a wide range of degree programs including a general bachelor's degree, a specialized bachelor's degree, several master's degrees, and a doctor's degree. In addition to pure mathematics, programs are available in mathematical statistics, numerical analysis, and teacher education. The Department cooperates closely with the Department of Physics and the College of Engineering in providing instruction in the area of applied mathematics. Several departments offer courses which are of interest to applied mathematics majors. Particular attention is directed to certain graduate courses in the Department of Aeronautics and Astronautics.

Special Facilities

The Center for Quantitative Science in Fisheries, Forest Resources, and Wildlife Sciences (Gerald J. Paulik, Director), provides a focus for applied statistical and mathematical activity directed particularly toward biological problems. Information on the applied statistics courses taught in the Center, most of which were formerly taught in the Mathematics Department, can be found in the section on the Center under the Colleges of Fisheries and of Forest Resources. The courses include Quantitative Science 382, 383, and 486 (formerly Mathematics 382, 383, and 486). Quantitative Science 281 is equivalent to Mathematics 281.

The University of Washington Computer Center is equipped with a CDC 6400 computer system, a Burroughs B5500, and miscellaneous supporting equipment. It provides computing services to all areas of the University and is also available to all students. Robert G. Gillespie is the Director, Charles W. Dickens, Monique Rona, and Scott Eyler are Assistant Directors of the Computer Center.

A graduate program in biostatistics leading to the degrees of Master of Science and Doctor of Philosophy is administered by the Graduate School Biomathematics Group. Faculty in the Department of Mathematics and certain other departments in the College of Arts and Sciences and certain departments in the School of Medicine cooperate in this program. Information concerning the program will be found in the *Interdisciplinary Graduate Degree Programs* section of this catalog.

A graduate program in computer science leading to the M.S. and Ph.D. degrees is administered by the Graduate School Computer Science Group. Faculty in the Department of Mathematics and certain other departments throughout the University cooperate in this program. Information concerning the program will be found in the *Interdisciplinary Graduate Degree Programs* section of this catalog.

Undergraduate Programs

Advisers

J. Maurice Kingston
C36B Padelford Hall

Kathleen B. O'Keefe
C36C Padelford Hall

Students planning to take courses in mathematics, either as mathematics majors, or as part of some other curriculum, are strongly advised to elect four years of mathematics in high school. Mastery of these four years of work will prepare them to enter Mathematics 124 (Calculus with Analytic Geometry), which is the

first course of university level offered by the Department. Admission to this course is based upon high school records and either the Mathematics Achievement Test of the Washington Pre-College Testing Program or a placement test given by the Bureau of Testing. Students who have completed a full year of calculus in high school, preceded by accelerated study, are encouraged to take the Advanced Placement Test in Mathematics given by the College Entrance Examination Board or parts I and/or II of the Calculus Test given by the Bureau of Testing. Those whose scores on these examinations are satisfactory will be placed in Mathematics 125 or 126 and given university credit for the courses in calculus which they have been allowed to skip. Alternatively, these students may be qualified to enter the freshman honors course.

As a service to entering students who have had less than four years of high school mathematics, the Department offers the following courses which duplicate high school material: 101 (Intermediate Algebra), 104 (Plane Trigonometry), 105 (Elementary Functions). Mathematics 105 may be taken for University credit. In order to enter 105, students must have the high school prerequisites listed under the detailed course descriptions (see *Volume II, Description of Courses*), and must also obtain satisfactory scores on the Mathematics Achievement Test of the Washington Pre-College Testing Program. Mathematics 101 and 104 are offered without credit and are available only through the Division of Continuing Studies, upon payment of a separate fee.

In order to enter 105, students must have the high school prerequisites listed under the detailed course descriptions (see course descriptions in *General Catalog Volume II*) and also must obtain satisfactory scores on the Mathematics Achievement Test of the Washington Pre-College Testing Program.

GRADUATION REQUIREMENTS

Bachelor of Arts

The B.A. degree is designed for liberal arts majors who have only modest professional aims in mathematics. It also provides a suitable program for prospective high school teachers of mathematics. Grades in all mathematics courses to be counted toward this degree must be C or better, and a grade-point average of at least 2.00 in all mathematics courses must be maintained. There are two curricular options:

LIBERAL ARTS OPTION

A minimum of 50 credits in mathematics beyond trigonometry is required. Courses must include 124, 125, 126, 224, 205 or 302, and 28 or 29 credits in approved electives.

**TEACHER PREPARATION OPTION**

A minimum of 50 credits in mathematics beyond trigonometry is required. Courses must include 114, 124, 125, 126, 205 or 302, 327, 391, 392, 411, 412, 444, 445, and 8 or 9 credits in approved electives.

Bachelor of Science

The B.S. degree is designed for students who wish professional training in mathematics as preparation for graduate study or industrial employment. Grades in all mathematics courses to be counted toward this degree must be C or better, and a grade-point average of at least 2.50 in all mathematics courses must be maintained. Candidates for the degree must elect one year of general physics and are strongly urged to obtain a reading knowledge of French, German, or Russian. There are three curricular options:

MATHEMATICS OPTION

A minimum of 54 credits in mathematics beyond elementary functions is required. Courses must include 124, 125, 126, 224, 302, 324 or 327, and 29 credits in approved electives. The electives must include 9 credits in courses numbered 400 or above in each of two of the four categories: algebra, analysis, geometry, and statistics. This sequence of courses is recommended but not prescribed:

Freshman year: 124, 125, 126

Sophomore year: 224, 238, 302, 303, 327, general physics

Junior year: 324, 325, 326, 402, 403, 404

Senior year: 424, 425, 426, 441, 442, 443

MATHEMATICAL STATISTICS OPTION

A minimum of 54 credits in mathematics beyond elementary functions is required. Courses must include 124, 125, 126, 224, 302, 303, 327, 394, 395, 482, 483, and two of the following three courses: 396, 484, 485. An additional requirement is 8 credits in approved mathematics or statistical electives.

NUMERICAL ANALYSIS OPTION

A minimum of 54 credits in mathematics beyond elementary functions is required. Courses must include 114, 124, 125, 126, 224, 238, 302, 303, 324 or 327, 374, 438, 464, 465, and 466, and 6 credits in approved electives.

Honors in Mathematics**Adviser**

Lloyd Fisher

C502 Padelford Hall

Members of the College of Arts and Sciences Honors Program who fulfill the requirements of that program

during the freshman and sophomore years, in addition to the departmental honors requirements listed below, receive a bachelor's degree "With College Honors in Mathematics." With the approval of the departmental honors committee, superior students who are not members of the College Honors Program may participate in the departmental honors curriculum and receive a bachelor's degree "With Distinction in Mathematics."

There are four departmental requirements for honors:

(1) meet all requirements for a bachelor of science degree in mathematics; (2) complete the following courses: 302, 402, 403, 404, 424, 425, 426, and at least two quarters of 496H; (3) attain a grade-point average of 3.50 or better in all mathematics courses. In addition, it is strongly recommended that students in the honors program take the special freshman and sophomore honors courses, 134H, 135H, 136H, 234H, 235H, and 236H.

Graduate Programs**Graduate Program Adviser**

Charles R. Hobby

C36 Padelford Hall

The student's minimum undergraduate preparation for an advanced degree in mathematics must be equivalent to the requirements for a mathematics major for the bachelor's degree. Students presenting only the minimum amount of undergraduate mathematics cannot expect to earn a master's degree in less than two years.

The Department offers programs leading to the degrees of Master of Arts, Master of Arts for Teachers, Master of Science, Master of Science in Mathematical Statistics, and Doctor of Philosophy.

Since one foreign language is required for all the above master's degrees, except the Master of Arts for Teachers, and two languages are required for the doctor's degree, students seeking admission are advised as undergraduates to elect languages. French, German, and Russian are the only languages acceptable toward these degrees.

The minor in mathematics for a master's degree requires at least 12 credits in approved courses numbered 400 or above. At least 9 of these are to be taken in residence.

PROGRAMS OF STUDY**Master of Arts (Thesis Program)**

A minimum of 27 approved credits in courses numbered 400 or above, with at least 9 credits in courses numbered 500 or above, is prescribed. These courses must include at least 6 credits in each of algebra, analysis, and one other field. The thesis (additional 9

credits) for this degree, while demonstrating ability and aptitude, may be largely expository.

Master of Arts (Nonthesis Program)

A minimum of 36 approved credits in courses numbered 400 or above, with at least 18 of these credits in courses numbered 500 or above, is prescribed. The 18 credits in courses numbered 500 or above should be distributed over no more than three sequences. The total credits should include at least 6 credits each in algebra, analysis, and one other field. The final examination will be a comprehensive one.

Master of Arts for Teachers

The program for this degree is planned to increase the mathematical background of present or prospective high school teachers of mathematics. Thus the program is devoted primarily to courses in mathematics chosen for their relevance to the mathematics curriculum of the high school.

A minimum of 36 credits is required, of which at least 33 must be in mathematics at the 400 level or above. The 3 credits remaining may be in either mathematics at the 400 level or above, or at the 300 level or above in a field other than mathematics. At least 18 of the required 36 credits must be at the level of 500 or above, of which at least 15 must be in mathematics courses. Up to 9 of these credits may be in Mathematics 700 (Master's thesis).

Master of Science

A minimum of 27 approved credits in courses numbered 400 or above, with at least 18 credits in courses numbered 500 or above, is prescribed. These courses must include at least 6 credits in each of algebra, analysis, and one other field. The thesis (additional 9 credits) should demonstrate the student's ability to engage in independent research.

Under certain circumstances, this degree may also be awarded to a student who has passed the General Examinations for the Ph.D. degree. In such a case, no thesis is required.

Master of Science in Mathematical Statistics

The undergraduate preparation should consist of courses in probability and statistical inference equivalent to 394, 395, and 482, 483. The student must present a minimum of 27 approved credits in mathematics courses numbered 400 or above. This work may include, on approval, some courses in mathematical statistics needed to make up deficiencies in undergraduate preparation and must include 15 credits in mathematical statistics or probability courses numbered 500 or above. The thesis (9 credits) should demonstrate the student's ability to engage in independent research.

Doctor of Philosophy

The General Examination of a prospective candidate for the Doctor of Philosophy degree covers a basic graduate-level knowledge of algebra, real variables, complex variables, topology, and advanced calculus. The first-year level graduate courses provide adequate preparation for this examination.

The *minor* for the degree of Doctor of Philosophy requires a minimum of 33 approved credits in courses numbered 400 or above, including at least 6 credits in each of three of the four categories: algebra, analysis, geometry, and statistics.

MICROBIOLOGY

Chairman

John C. Sherris

G305 Health Sciences Building

Microbiology is the science of microscopic organisms, including algae, bacteria, fungi, protozoa, rickettsia, viruses, and yeast. It is concerned with their form, structure, reproduction, physiology, and metabolism, and with their role in nature. The associated science of immunology forms an important part of the work of the Department. Major departmental interests include study of the general biological characteristics of microorganisms, their role in ecology, their parasitic and disease-producing activities, and the role of the immune response in infectious diseases, hypersensitivity states, and in resistance to tumors.

The Department of Microbiology offers a four-year curriculum leading to a bachelor's degree in the College of Arts and Sciences. An honors program leading to a bachelor's degree with honors or distinction is available to qualified students. The purpose of the undergraduate degree is to prepare the individual to assume the responsibilities of a microbiologist upon graduation. It also provides the background for advanced degree work should the student's capabilities warrant it.

The degrees of Master of Science and Doctor of Philosophy are also offered in this field.

Undergraduate Programs

Advisory Office

G313 Health Sciences Building

GRADUATION REQUIREMENTS

The requirements are 45 credits in the biological sciences, including Biology 210, 211, 212 (preferred sequence) or 10 to 15 credits in botany or zoology and a minimum of 30 credits in microbiology courses including 400, 430, 445, 446 and 496 or 499 for no less than 2 credits; Physics 114, 115, 116 (or 121, 122,



123); Chemistry 140, 150, 151, 160, 221 and 231, 232, or 231, 235, 236, or 335H, 336H, 337H (three quarter sequences preferred); Mathematics 124. A maximum of 10 credits in botany, genetics, and zoology from a list of courses approved by the Department of Microbiology may be counted toward the 30 credits of required microbiology courses.

A grade-point average of 2.00 in microbiology courses is required for graduation.

During their third and fourth years most students take specialized courses in microbiology and related fields of interest. The following courses are recommended for all students: Microbiology 320, Genetics 451, Botany 360, and Biochemistry 405 or 440, 441, 442. For students considering graduate work one year of calculus (Mathematics 124, 125, 126), and physical chemistry (Chemistry 350, 351 or 455, 456, 457) are also strongly recommended.

Honors in Microbiology

Adviser

Neal B. Groman

H325 Health Sciences Building

Members of the College of Arts and Sciences Honors Program may be admitted to the Honors Program in Microbiology during their junior year, or any time prior to that, subject to staff approval. They must fulfill the requirements of the College of Arts and Sciences Honors Program during the freshman and sophomore years, and while doing so are urged to take as many honors courses in undergraduate chemistry, physics, and mathematics as their program will permit.

Students graduating "With College Honors in Microbiology" must comply with the requirements for a Bachelor of Science degree. Their upper-division years must include a minimum of 6 credits in 495H (Undergraduate Laboratory Research), preparation of a thesis based on laboratory and library research, and an overall grade-point average of 3.25.

With the approval of the Department, superior students who are not members of the College Honors Program may participate in the departmental honors curriculum and receive a bachelor's degree "With Distinction in Microbiology."

Graduate Programs

Graduate Program Adviser

Howard C. Douglas

H309 Health Sciences Building

Students who intend to work toward the Master of Science or Doctor of Philosophy degree must apply for admission to the Graduate School and meet the require-

ments outlined in the *Graduate Study* section. Prospective candidates for advanced degrees are selected primarily upon the basis of scholarship and motivation. The fields of specialization for advanced degrees are general and medical bacteriology, microbial physiology and genetics, immunology and virology.

An undergraduate record of at least a B average is considered an indication that the student is capable of more advanced work.

While the academic background of students entering graduate work in microbiology is variable, it is generally agreed that a strong background in chemistry and biology is essential. One year of physics and mathematics through analytic geometry and calculus is also strongly recommended.

MUSIC

Director

John T. Moore

106 Music Building

Professors

James Beale, William Bergsma, James Carlsen, Stanley Chapple (emeritus), Mary Curtis-Verna, R. Alec Harman, Eva Heinitz, Randolph Hokanson, Demar Irvine, Berthe P. Jacobson (emeritus), Gerald Kechley, Silvia Kind, Samuel Krachmalnick, Leon Lishner, David Montagu (acting), Kathleen Munro (emeritus), Bela Siki, William O. Smith, Vilem Sokol, Robert Suderburg, John Verrall, Walter Welke, August H. Werner (emeritus), Emanuel Zetlin (emeritus)

Associate Professors

Warren Babb, Henry L. Clarke, Rodney Eichenberger, Walter A. Eichinger, Robert Garfias, Else Geissmar, Arthur Grossman, Edison Harris, Clyde Jussila, George C. Kirchner (emeritus), Christopher Leuba, William McColl, Donald McInnes, John T. Moore, Neal O'Doan, Ralph Rosinbum, Felix Skowronek, Laila Storch, Bessie Swanson, Miriam Terry, Paul D. Tufts, Edith Woodcock (emeritus)

Assistant Professors

Kenneth Benshoof, William Bissell, Stuart Dempster, Robert Kauffman, Robert Knight, Florence Mesler, David Shrader, W. Ring Warner

Instructors

Roy Cummings, Michael Russell, Pamela Vokolek, Glenn White

Lecturers

Joseph Brazil, Charles Brennand, Irwin Eisenberg, Alan Iglitzin, Abraham Maraire, Veda Reynolds, Charles Troy

Associates

Carol Scott, Barbara Reeder

The Philadelphia Quartet

Veda Reynolds (first violin), Irwin Eisenberg (second violin), Alan Iglitzin (viola), Charles Brennand (cello)

The Soni Ventorum Wind Quintet

Felix Skowronek (flute), Laila Storch (oboe), William McColl (clarinet), Arthur Grossman (bassoon), Christopher Leuba (horn)

Music, as a creative art, is studied through its literature, compositional techniques, and in the laboratory of performance. The general student may enroll in survey courses or participate, as qualified, in the performance life of the School of Music. Courses of study for the music major include the disciplines of composition, performance, history, theory, ethnomusicology, and music education; and extend through undergraduate training to the master's and doctor's level.

All music majors must qualify for private instruction in performance. Admission to private lessons is by audition before the appropriate faculty. No special charge is made for private instruction, for practice facilities, or use of the School's instruments.

The School's performing groups are the University Singers (no audition required), the 40-voice University Chorale, the Oratorio Chorus, the Madrigal Singers; the University Symphony Orchestra and the Sinfonietta; the Opera Theater, Festival Opera, the Opera Workshop; the University Band, the 45-piece Wind Sinfonietta, the Marching Band; the Collegium Musicum; the Jazz Ensemble; the Contemporary Group; the Gagaku Ensemble; and many chamber music ensembles.

These groups cooperate with the School of Drama in production of musicals; with stations KUOW and KCTS-TV (Channel 9) in the presentation of musical events; with the Seattle Opera Guild and Seattle Public Schools in the production of touring chamber operas; and with the Division of Continuing Education in offering faculty and student concerts and recitals throughout the state.

The Philadelphia Quartet, in residence to the universities and colleges of Washington, gives approximately twenty concerts a year under the auspices of the School of Music.

The Soni Ventorum Wind Quintet is in residence at the University of Washington.

Special Facilities

The School of Music is housed in a five-story, sound-controlled modern building which contains a small

recital hall (285 seats), an acoustics studio, 19 large class and rehearsal rooms, 21 teaching studios, 15 offices, 41 practice rooms; 42 grand pianos, 54 upright pianos; one baroque organ, three practice organs; four harpsichords; a collection of baroque instruments; a collection of orchestral and band instruments; collections of African, Indian, Korean, and Japanese instruments; the Music Library (37,000 books and scores); the Record Library (17,000 records and tapes); and the Kinscella Collection of American music.

Chapters of *Mu Phi Epsilon*, the national music sorority, and a student chapter of the Music Educators National Conference are based at the School of Music.

Financial Aid

The Brechemin Family Foundation offers annually, through the School of Music, a number of scholarships in performance areas. These scholarships normally carry stipends of \$2,000, are renewable, and are awarded by faculty vote in auditions held each spring at the School of Music, as are a number of other prizes and awards. For audition appointments, write the Undergraduate Adviser, 105 Music Building.

Music students are eligible for scholarships offered by the University at large. Certain of these (such as the Milnora de Beelen Scholarships for sophomore, junior, and senior women) give special consideration to music majors.

Student help is employed at hourly rates as accompanists, ushers, librarians, orchestra and band managers, and as assistants in performance. Applicants should consult the Administrative Secretary, 104 Music Building.

Graduate Financial Aid

Doctoral students may apply for Graduate School Research Assistantships and National Defense Education Act Fellowships. Teaching Assistantships are available in theory, sight-singing, history, piano, music education, opera coaching, opera staging, conducting, and ethnomusicology. Applicants should write to the Graduate Program Adviser, 109 Music Building. Hourly employment is available to readers, copyists, librarians, accompanists, and assistants in performance; consult the Administrative Secretary, 104 Music Building. Seattle and its suburbs afford substantial employment opportunities to qualified performers and teachers.

Undergraduate Programs

Adviser

Paul D. Tufts
105 Music Building



An advanced level of preparation, representing a number of years of private study, is expected in the major performance area. Ear-training, sight-singing, and studies in music history and theory are strongly encouraged. Advanced preparation in these areas may result in advanced standing and credit by examination.

The student is urged to complete the preparation in academic studies recommended by the College of Arts and Sciences. Early study of French or German is particularly useful for students planning graduate study.

All entering music majors must pass an examination in basic piano as follows: be able to play all major and harmonic minor scales; a simple piece by Bach; an easy sonatina; an easy composition by a romantic or contemporary composer; be able to read at sight music of moderate difficulty. Students proficient in another instrument or in voice, but deficient in basic piano, may begin their musical studies, but must enroll in Music 136 until basic piano proficiency is established.

The School of Music offers a four-year program leading to the degree of Bachelor of Arts, and a five-year program leading to the degrees of Bachelor of Arts and Bachelor of Music to be awarded concurrently. A four-year program leading to the degree Bachelor of Music is offered to a limited number of students.

For four-year programs leading to the bachelor's degree and teacher certification at the secondary or elementary level, see the *College of Education* section.

The core of each of the undergraduate curricula is represented by the following course of study intended to develop an understanding of music through the study of its theory and history.

Music Theory-History Core		
COURSES		CREDITS
110, 111, 112	FIRST-YEAR THEORY (3,3,3)	9
113, 114, 115	EAR TRAINING (1,1,1)	3
210, 211, 212	SECOND-YEAR THEORY (3,3,3)	9
213, 214, 215	MUSIC AFTER 1750 (3,3,3)	9
310	MODAL COUNTERPOINT (3)	3
311	TONAL COUNTERPOINT (2)	2
312	CONTEMPORARY IDIOMS (3)	3
313, 314	MUSIC BEFORE 1750 (3,3)	6
THEORY OR HISTORY ELECTIVES		10
		54

Bachelor of Arts

This degree is offered with a major in Music, and is intended for students who wish to emphasize general competence in music within the framework of a liberal education. Candidates are expected to acquire performance skills and ensemble experience comparable with those of the mature and intelligent adult amateur. The student has the option of additional concentration in either the theory-history aspects or the performance aspects of music.

Music Theory-History Option

COURSES	CREDITS
MUSIC THEORY-HISTORY CORE	54
UPPER-DIVISION VOCAL OR INSTRUMENTAL INSTRUCTION	9
ENSEMBLES	6
	69

Vocal or Instrumental Option

MUSIC THEORY-HISTORY CORE	44
LOWER-DIVISION VOCAL OR INSTRUMENTAL INSTRUCTION	9
UPPER-DIVISION VOCAL OR INSTRUMENTAL INSTRUCTION	9
ENSEMBLES	8
	70

Students wishing to pursue the theory-history option, with emphasis in ethnomusicology, should consult with their music adviser regarding suitable electives to include languages and area studies outside of music.

A grade-point of 2.50 in music courses is required for graduation.

Bachelor of Arts and Bachelor of Music (Concurrent)

This combined five-year program is intended for students who desire the advantages of a liberal education together with strong professional preparation. The requirements for the Bachelor of Arts and Bachelor of Music degrees are to be taken concurrently over a five-year period. Students contemplating graduate studies in music are strongly urged to pursue this curriculum.

Students who already hold an approved Bachelor of Arts degree may earn the Bachelor of Music degree separately, but must expect an extended period of study before the requirements can be fulfilled.

A grade-point average of 2.50 in music courses is required for graduation. Candidates for the concurrent Bachelor of Music degree "With Distinction in Music" must obtain a grade-point average of 3.20 in music courses.

Composition Major

COURSES	CREDITS
MUSIC THEORY-HISTORY CORE	54
191, 291, 391, 491 Composition	24
487 Tonal Counterpoint	3
280, 380, 381, 382 Conducting (1,1,1,1)	4
Vocal or Instrumental Instruction	24
Ensembles	12
Music Electives	6
	127

Music History Major

COURSES	CREDITS
MUSIC THEORY-HISTORY CORE	54
5 credits from 316, 317, 318 Music Cultures of the World	5
3 credits from 400, 401, 402, 403	3
3 credits from 404, 413, 416, 417, 420	3
3 credits from 408, 411, 414, 418, 421	3
3 credits from 409, 412, 415, 419, 422, 423	3
MUSIC HISTORY-LITERATURE ELECTIVES	9
MUSIC ELECTIVES	9
VOCAL OR INSTRUMENTAL INSTRUCTION	24
ENSEMBLES	12
	125

Students intending to pursue graduate studies are strongly advised to establish proficiency in German or French, and to acquire some acquaintance with one or two additional foreign languages. For emphasis in ethnomusicology, consult the music adviser regarding suitable area studies other than music.

Music Education Major

COURSES	CREDITS
Music Theory-History Core (See special inclusions below)	54
340 Music in General Education	3
Two courses from the following	6
432 The General Music Class (3)	
440 Music in Early Childhood (3)	
441 Music in Later Childhood (3)	
442 Instrumental Curriculum: Methods and Materials (3)	
443 Choral Curriculum: Methods and Materials (3)	
280, 380, 381, 382 Conducting (1,1,1,1)	4
Major Performance Medium	18-24
Secondary Performance Medium	12-18
Performance Electives	6
Ensembles (minimum of one year choral ensemble required)	12
	121

General Music Options (Elementary and Secondary)

- Music Theory-History Core to include 5 credits from 316, 317, 318 Music Cultures of the World.
- Music Education Methods to include
 - 440 Music in Early Childhood, 441 Music in Later Childhood (for persons pursuing the elementary emphasis)
 - 432 The General Music Class (for persons pursuing the secondary emphasis)
- The secondary and/or elective performance media must include the following or equivalent proficiency: 232 (Percussion Techniques); 236 (Secondary Piano); 237 (Class Instruction: Voice); 240 (Guitar Techniques); and 241 (Recorder Techniques)

Instrumental Option

- Music Theory-History Core to include 334 Band Arranging or 490 Orchestration
- Music Education Methods to include 442 Instrumental Curriculum: Methods and Materials
- Major performance medium should be an orchestral or band instrument.
- The secondary and/or elective performance media must include the following or equivalent proficiency: 136 (Basic Keyboard); 137, 138, 139 (Class Instruction: Voice); 220, 221, 222, 223, 224, 225 (String Techniques I, II); 226, 227, 228 (Woodwind Techniques); 229, 230, 231 (Brass Techniques); and 232 (Percussion Techniques).
- Major performance medium must total 24 credits.

Choral Option

- Music Education Methods to include 443, Choral Curriculum: Methods and Materials.
- Major and secondary performance media must be piano and voice, or voice and piano.
- Major performance medium must total 24 credits.

Piano Major

COURSES	CREDITS
MUSIC THEORY-HISTORY CORE	54
160, 260, 360 PRIVATE INSTRUCTION: PIANO	27
460 (TWO YEARS) PRIVATE INSTRUCTION: PIANO	18
479 SENIOR RECITAL	1
323, 324, 325 ACCOMPANYING (2,2,2)	6
326, 327, 328 REPERTOIRE (1,1,1)	3
434, 435, 436 PEDAGOGY (2,2,2)	6
ENSEMBLES	15
	130

Violin or Violoncello Major

MUSIC THEORY-HISTORY CORE, TO INCLUDE	
487 TONAL COUNTERPOINT	54
161, 163, 261, 263, 361, 363 PRIVATE INSTRUCTION: VIOLIN, VIOLONCELLO	27

COURSES

461, 463 (TWO YEARS) PRIVATE INSTRUCTION: VIOLIN, VIOLONCELLO	18
479 SENIOR RECITAL	1
434, 435, 436 PEDAGOGY (2,2,2)	6
140 PRIVATE INSTRUCTION: PIANO OR 236 SECONDARY PIANO	6
280 BASIC PRINCIPLES OF CONDUCTING	1
ENSEMBLES	21
	134

Violinists should complete one quarter of viola.

Voice Major

MUSIC THEORY-HISTORY CORE	54
162, 262, 362 PRIVATE INSTRUCTION: VOICE	27
462 (TWO YEARS) PRIVATE INSTRUCTION: VOICE	18
479 SENIOR RECITAL	1
140 PRIVATE INSTRUCTION: PIANO OR 236 SECONDARY PIANO	6
233 MUSIC THEATRE TECHNIQUE	1
309 ADVANCED MUSIC THEATRE TECHNIQUE	1
323 ACCOMPANYING	2
326, 327, 328 REPERTOIRE (1,1,1)	3
434, 435, 436 PEDAGOGY (2,2,2)	6
280, 380, 381, 382 CONDUCTING (1,1,1,1)	4
ENSEMBLES	12
	135

Voice majors should establish proficiency in French, German, or Italian and complete an additional 15 credits in a *second* language from this group, as well as 5 credits in Speech 300 (Speech Science).

Organ Major

MUSIC THEORY-HISTORY CORE, TO INCLUDE	
487 TONAL COUNTERPOINT	54
165, 265, 365 PRIVATE INSTRUCTION	27
465 (TWO YEARS) PRIVATE INSTRUCTION	18
479 SENIOR RECITAL	1
320, 321, 322 KEYBOARD TRANSPOSITION AND IMPROVISATION (2,2,2)	6
323, 324 ACCOMPANYING (2,2)	4
326, 327, 328 REPERTOIRE (1,1,1)	3
280, 380, 381, 382 CONDUCTING (1,1,1,1)	4
ENSEMBLES	12
	129

Orchestral Instrument Major

MUSIC THEORY-HISTORY CORE	54
166 THROUGH 176, 266 THROUGH	
276, 366 THROUGH 376 PRIVATE INSTRUCTION	27
466 THROUGH 476 (TWO YEARS) PRIVATE INSTRUCTION	18
479 SENIOR RECITAL	1
140 PRIVATE INSTRUCTION: PIANO OR	
236 SECONDARY PIANO	6
280, 380, 381, 382 CONDUCTING (1,1,1,1)	4
ENSEMBLES	21
	131

Bachelor of Music

The Bachelor of Music degree is intended for a limited number of specially qualified students who wish to emphasize professional training in performance within a four-year program. A minimum of 180 credits is required, of which 60 credits must be taken in departments other than Music. The 60 credits should include the basic proficiency requirement of the College of Arts and Sciences and (as a distribution requirement from the Distribution List in this catalog) no less than 20 credits in each of two fields.

A grade-point average of 3.20 in music courses is required for graduation. All majors in this program must complete 54 credits in a theory-history sequence to include 110, 111, 112, 113, 114, 115, 210, 211, 212,



213, 214, 215, 310, 311, 312, 313, 314, and 10 credits to complete the total.

Specific requirements for each special area are as follows:

PIANO MAJOR: A minimum total of 122 credits in music is required. Courses must include 50 credits in 160, 260, 360, 379, 460, 479; 12 credits in Ensembles; 6 credits in approved electives in music.

ORGAN MAJOR: A minimum total of 123 credits in music is required. Courses must include 50 credits in 165, 265, 365, 379, 465, 479; 12 credits in Ensembles; 7 credits in approved electives in music.

VIOLIN OR VIOLONCELLO MAJOR: A minimum total of 124 credits in music is required. Courses must include 50 credits in 161, 163, 261, 263, 361, 363, 379, 461, 463, 479; 12 credits in Ensembles; 8 credits in approved electives in music.

VOICE MAJOR: A minimum total of 128 credits in music is required. Courses must include 50 credits in 162, 262, 362, 379, 462, 479; 12 credits in Ensembles; 12 credits in approved electives in music.

ORCHESTRAL INSTRUMENT MAJOR: A minimum total of 125 credits in music is required. Courses must include 43 credits in 166 through 176, 266 through 276, 366 through 376, 466 through 476, 479; 21 credits in Ensembles; 7 credits in approved electives in music.

COMPOSITION MAJOR: A minimum of 122 credits in music is required. Courses must include 24 credits in Composition from 191, 291, 391, 491; 12 credits in Ensembles; 16 credits in vocal or instrumental instruction; 16 credits in approved electives in music.

Honors in Music

Adviser
Paul Tufts
109 Music Building

Music majors who are members of the College of Arts and Sciences Honors Program and who fulfill the requirements of that program during their freshman and sophomore years will be eligible for a bachelor's degree "With College Honors in Music" upon completion of the requirements of the departmental honors curriculum.

With approval of the School of Music Honors Committee, superior students who are not members of the College Honors Program but who are pursuing either the five-year combined Bachelor of Arts and Bachelor of Music or the four-year Bachelor of Arts curriculum with emphasis in music history-theory may participate

in the School of Music honors curriculum and receive a bachelor's degree "With Distinction in Music."

The departmental honors requirements are a cumulative grade-point average of at least 3.00 and a grade-point average in music courses of 3.20 or better.

Graduate Programs

Graduate Program Adviser
James M. Beale
109 Music Building

Graduate study in music may follow one of two general paths. In the programs leading to the degrees of Master of Arts and Doctor of Philosophy, the emphasis is upon the acquisition of a body of knowledge and the development of critical and research skills, as in the fields of music theory, historical musicology, systematic musicology, or ethnomusicology. In the programs leading to the degrees of Master of Music and Doctor of Musical Arts, the emphasis is upon the application of knowledge and the advancement of professional competence, as in the fields of composition, performance, conducting, music education, or opera direction and production.

Whichever path the student chooses, his scope should not be limited. The scholar needs as background such a lively acquaintance with music as can be obtained only through training and experience in performance. Conversely, the composer, performer, or teacher requires the insight to be gained through investigation of the theory, history, and principles of his art.

Completion of one of the undergraduate majors, or the equivalent, with a superior scholastic record (B average or better), is the normal prerequisite to graduate study in the same field. A change of major emphasis will involve some adjustment of prerequisites. The student is expected to have had a reasonably broad liberal education along with the previous musical training; the bachelor's degree should have included not less than 60 quarter credits in departments outside of music, in the humanities, social sciences, and natural sciences.

Students who intend to work toward advanced degrees must meet the requirements of the Graduate School as outlined in the *Graduate Study* section. Application for admission to the Graduate School must be made well in advance of intended enrollment. The applicant should also initiate correspondence or a conference with the Graduate Program Adviser, explaining the nature of his training and experience, the educational goals he seeks through graduate study, and his career plans. Supporting evidence in the form of letters of recommendation, musical compositions, programs, and

tape recordings of performances or research papers, should be submitted as requested. Admission to graduate vocal or instrumental instruction is by jury examination only.

Master of Arts

A minimum of 36 credits is required, of which at least 18 credits must be in courses numbered 500 or above, including 9 credits of Master's Thesis 700. Students must have a reading knowledge of one foreign language. The emphasis in this program will be in music history and literature, music theory, music education, systematic musicology, or ethnomusicology. The purpose of the thesis is to develop the student's capacity for independent investigation.

Master of Arts for Teachers

Students accepted for admission to the Master of Arts for Teachers program must have completed at least one year of successful music teaching experience on the elementary, secondary, or college level. A minimum of 36 credits is required, of which 30 must be in music at the 400 level or above, and 6 must be in approved electives. At least 18 of the required 36 credits must be at the 500 level or above. No foreign language is required. The student must pass a comprehensive final examination which will be adapted in each case to the experience, program, and record of the student.

Master of Music

Specializations are offered in composition, opera production, music performance (piano, violin, voice, organ, or another approved instrument), and conducting. The student may elect the thesis or the nonthesis option. Students must have a reading knowledge of one foreign language.

Thesis Option: The requirements are a minimum of 36 approved credits, of which 18 must be in courses numbered 500 or above, including 9 credits of Master's Thesis 700.

Nonthesis Option: The student must complete a minimum of 36 approved course credits, of which 18 must be in courses numbered 500 or above, and pass a comprehensive Final Examination.

Doctor of Musical Arts

This degree is offered with a choice of emphasis in some major branch of performance, in original composition, in opera production, or in music education. Students entering this program are expected to have had some professional experience in addition to their formal training. The purpose of the program is to develop expertise in the creative and applied aspects of music, supported by a firm command of the theoretical

and historical aspects together with a modest degree of breadth in cognate areas outside of music.

A reading knowledge of one foreign language is required. In lieu of a single longer dissertation, submission may be in three parts. One part must be a research paper; the other two may be additional research papers, or musical compositions, or documentation of public performances, or professional lecture-demonstrations.

Doctor of Philosophy

This degree is offered in Music, and with opportunity for specialization in historical musicology, ethnomusicology, systematic musicology, or music theory. Students must have a reading knowledge of German, and one of French, Italian, or Latin, and of such other languages as are necessary for research in the field of the dissertation. Candidates must present an acceptable dissertation representing original and independent investigation.

Regulations governing doctor's degrees are outlined in the *Graduate Study* section. A minimum of three years of recent graduate study is required of which not less than two years must be spent in residence at the University of Washington.

NEAR EASTERN LANGUAGES AND LITERATURE

Chairman

Farhat J. Ziadeh
229A Denny Hall

Professor

Farhat J. Ziadeh

Associate Professors

Nicholas L. Heer, Pierre A. MacKay

Assistant Professors

Walter G. Andrews, John W. Clear,
Michael B. Loraine

Lecturer

Allen H. Podet

The achievement of the Near East in the course of human civilization has been reflected and largely preserved in the languages and literature of the area. The languages presently offered by the Department are Arabic, the intellectual and literary medium of medieval Islamic culture; Hebrew, the chief language of the Old Testament; Persian, the medium for an interesting and attractive literature of great influence on Islam as a whole; Turkish, the language of the originally Central Asian people who built the last great Islamic empire, the Ottoman; and the Semitic languages of Akkadian, Aramaic, and Ugaritic, important for their cultural and linguistic connections with other Near



Eastern languages. The emphasis of the Department is on the ancient and medieval Near East, an understanding of which is necessary for an appreciation of the area in more recent times, though modern aspects of the study are not neglected.

On the undergraduate level, a student generally concentrates his work on one or two Near Eastern languages, looking towards comprehension and facility in reading, and on those aspects of literature and culture associated with his main language of interest. On the graduate level, and indeed on the upper-division undergraduate level, advanced study is possible in several areas. In language and literature proper this study embraces history of literature, textual criticism, language structure, and literary genres. In the field of culture the study embraces literature on institutions, law, theology, mysticism, philosophy, and topography and monuments of important cities.

The study of Near Eastern languages is conceived of as forming an important segment of a student's liberal or general education. Students who study these languages as a vocation may pursue careers in teaching, mostly at the college and university levels; in U.S. diplomatic and informational services; in international organizations; and in corporations and foundations with Near Eastern interests.

The Department of Near Eastern Languages and Literature offers courses leading to the degrees of Bachelor of Arts and Master of Arts.

Undergraduate Programs

Adviser

Walter G. Andrews
219 Denny Hall

GRADUATION REQUIREMENTS

Bachelor of Arts

The requirements for the Bachelor of Arts degree include 30 credits or the equivalent of basic courses (i.e., 101-103 and 201-203) in one Near Eastern language plus at least 9 credits of 400-level courses in the major language. In addition, an approved program of 30 credits is required in courses offered by the Department and/or courses on the Near East offered by other departments. This program may include additional credits of 400-level courses in the student's major language and 15 credits in a second Near Eastern language at the 100-200 level.

Credits may be arranged for study abroad, subject to University regulations governing transfer credit. Summer study in intensive language programs offered by universities in the United States and in the Middle East is particularly encouraged.

Graduate Programs

Graduate Program Adviser

Nicholas L. Heer
227 Denny Hall

The Department of Near Eastern Languages and Literature offers a program of graduate study leading to the Master of Arts degree. Admission to the program requires that the student satisfy admission requirements of the Graduate School, that he send a statement of purpose directly to the Department, and that he have a minimum of two, and preferably three, letters of recommendation forwarded to the chairman. Knowledge of a Near Eastern language is not a prerequisite for admission to the program, but the degree requires the equivalent of three years of language study, part of which may be covered by intensive summer study.

General requirements for the degree include 36 credits in approved courses and seminars, of which at least 9 credits must be for work numbered 500 and above; an acceptable thesis, for which 9 additional credits are given; and a reading knowledge of French or German (although in rare cases Russian, Spanish, or a second Near Eastern language may be acceptable).

Students may concentrate in Arabic, Hebrew, Persian, or Turkish. In addition to courses in language and literature, students are expected to take work in either Comparative Literature or Linguistics, and may include supporting courses in Near Eastern History and Political Science and in Asian Languages and Literature.

Students are responsible for knowing and fulfilling the general requirements of the Graduate School.

Since a change in requirements for the Master of Arts degree is currently being considered, the student is advised to write to the Department for further information before he applies for admission to the Graduate School.

OCEANOGRAPHY

Chairman

Maurice Rattray, Jr.
121 Oceanography Teaching Building

Assistant Chairman for Instruction

T. Saunders English

Assistant Chairman for Research

Francis A. Richards

Professors

Karl Banse, Clifford A. Barnes, Joe S. Creager, Richard H. Fleming, Joyce C. Lewin, Dean A. McManus,

Stanley R. Murphy, Maurice Rattray, Jr., Francis A. Richards

Associate Professors

Lawrence K. Coachman, William O. Criminale, Jr., T. Saunders English, J. Dungan Smith, Richard W. Sternberg

Assistant Professors

Lee C. Bennett, Jr., Roy Carpenter, Bruce W. Frost, Michael L. Healy, Victor W. Kaczynski, James C. Kelley, Clive B. Lister, Ronald T. Merrill, David Z. Piper

Research Appointments

Professors Richard C. Dugdale, George C. Anderson; Associate Professors Dora P. Henry, Lawrence H. Larsen, Hsin-Yi Ling; Assistant Professors Knut Aagaard, Alyn C. Duxbury, Ronald J. Echols, Seeyle Martin, John J. Walsh; Senior Research Associates Robert E. Burns, Terry E. Ewart, Fang An Lee, Theodore T. Packard, Mario M. Pamatmat, Gunnar I. Roden, Donald F. Winter, Thomas Worsley; Research Associates Erwin Dieter Hasselmann, Brian T. R. Lewis, James P. Thomas; Lecturer Walter C. Sands

Affiliate Faculty

Associate Professor William J. Campbell; Assistant Professors Glen A. Cannon, David Halpern

Oceanography is an environmental science which attempts to explain processes in the ocean and the interrelation of the ocean with the earth and the universe. Oceanography includes studies of the chemical composition of sea water; sea water in motion; interactions between sea and atmosphere and between sea and land and sediments and rocks beneath the sea; physics of the sea and sea floor; and life in the sea.

The student planning to enter oceanography should elect physics, chemistry, four years of mathematics, and other science courses available in high school. Preparation in French, German, or Russian is recommended. The time necessary to obtain a degree is longer if the student is not prepared to enter university-level science courses.

The University does not offer a major in marine biology, but undergraduate and graduate courses related to that field are offered by the Departments of Botany, Oceanography, and Zoology, and by the College of Fisheries.

The Department of Oceanography offers curricula for the degrees of Bachelor of Arts, Bachelor of Science, Master of Science, and Doctor of Philosophy. In many courses, students work at sea on vessels of the department. Summer Quarter instruction is offered both on

the main campus and at the Friday Harbor Laboratories on San Juan Island.

Undergraduate Programs

Advising Office

108 Oceanography Teaching Building

GRADUATION REQUIREMENTS

Bachelor of Arts

The student in the Bachelor of Arts curriculum must meet the requirements of the College of Arts and Sciences; choose a principal option and either (1) two supporting options or (2) one supporting option and two minor options in Oceanography. All programs must include one option in physical oceanography. Courses can be substituted by departmental permission.

PRINCIPAL OPTIONS

Biological

Biology 210, 211, 212, 472; Chemistry 231, 232 or 231, 235, 236; Genetics 451; Oceanography 434, 435; and 15 credits of upper-division biology

Chemical

Chemistry 221, 231, 235, 236, 241, 242, 455, 456, 457, and 4 credits in physical chemistry laboratory and 6 credits above 402; Oceanography 421, 422, 423, 424; and Quantitative Science 281, 382

Geological (Geology)

Chemistry 350; Geological Sciences 301, 311, 320, 321, 341, 361; Engineering 141; Mathematics 224; Oceanography 450, 451, 452, 453, and 3 credits of geological oceanography above 400; and Quantitative Science 281

Geological (Geophysics)

Chemistry 350; Geological Sciences 205, 320, 321, 340; Mathematics 238, 324, 325; Oceanography 450, 451, 452, 453; and Physics 221, 222, 223, 321, 322, 323

Physical

Atmospheric Sciences 431, 432, 441, 442 or Geophysics 402; Mathematics 238, 327, 328, 427, 428; Aeronautics and Astronautics 370, 470; Oceanography 417, 418, 419; and Physics 221, 222, 223, 321, 322, 323

SUPPORTING OPTIONS

Biological

Biology 101-102; Oceanography 433, 435

Chemical

Chemistry 221; Oceanography 421, 423

Geological

Geological Sciences 205; Oceanography 405

Physical

Oceanography 401, 402 or 417, 418, 419

**MINOR OPTIONS****Biological**

Oceanography 403

Chemical

Oceanography 421

Geological

Oceanography 406

Bachelor of Science

The Bachelor of Science curriculum is recommended for students who desire to complete a more intensive program than is required for the Bachelor of Arts. The student must meet the requirements of the College of Arts and Sciences; choose one principal option and three supporting options in Oceanography; and select 10 or more credits of upper-division science or mathematics, with the guidance of an academic adviser.

Honors in Oceanography**Departmental Honors Office**

108 Oceanography Teaching Building

Members of the College of Arts and Sciences Honors Program who fulfill the requirements of that program and the departmental honors requirements receive a degree "With College Honors in Oceanography." With the approval of the departmental honors committee, superior students who are not members of the College Honors Program may participate in the departmental honors curriculum and receive a bachelor's degree "With Distinction in Oceanography."

Requirements for honors students in the Department of Oceanography are: (1) grade requirements for admission to candidacy for an honors degree are a minimum average of 3.00 in oceanography courses and a minimum average of 3.00 in all other courses; (2) candidates for departmental honors will be selected by the departmental honors committee after completion of the sophomore year and before completion of the junior year; (3) honors courses in the Department of Oceanography, as follows:

Oceanography 180H

(Lower-division Tutorial—Honors, 6 credits)

Oceanography 380H

(Upper-division Tutorial—Honors, 6 credits)

Oceanography 480H

(Undergraduate Research—Honors, 6 credits)

Oceanography 488H

(Field Experience—Honors, 2-6, max. 6 credits)

Oceanography 489H

(Undergraduate Thesis—Honors, 1-6, max. 6 credits)

Honors credit is available to honors students in other courses by special arrangement with the professor and the departmental honors adviser; some advanced and graduate courses are open to honors students by arrangement. No regular courses are required of honors students that are not required of all oceanography majors.

A senior thesis will be required for each honors student. A comprehensive examination may be required of each honors student as part of the thesis requirement.

Graduate Programs**Graduate Program Adviser**

J. C. Lewin

108 Oceanography Teaching Building

Students who have majored in Oceanography or another science and appear likely to succeed in graduate study can be accepted in the program of the Department of Oceanography. Admission is based on grade records, letters of recommendation, and the results of the Graduate Record Examination. Students who have not majored in Oceanography should acquire a broad background in science and mathematics equivalent to the requirements for the bachelor's degrees in Oceanography. Students with weak or narrow undergraduate preparation will probably take longer to earn a graduate degree. Additional information can be obtained from the Graduate Program Office.

The student specializes in biological, chemical, geological, geophysical, or physical oceanography; interdisciplinary studies are possible. All requirements of the Graduate School must be satisfied.

Master of Science

The Department offers a thesis and a nonthesis program leading to the Master of Science degree. In both, the student and his adviser prepare a program of study to be approved by the student's Supervisory Committee. The program will include one principal option, two supporting options, and one minor option in Oceanography, and other courses in science and mathematics. A departmental comprehensive written examination is required. A language requirement appropriate to the student's area of specialization will be set by the Supervisory Committee of each graduate student who is working toward a degree. Students will be encouraged to have a foreign language before entering the graduate program.

In the thesis program, a thesis approved by the Supervisory Committee must be prepared and presented at a seminar. The nonthesis program requires an approved research activity; the Supervisory Committee will decide whether written or oral reports are necessary.

Doctor of Philosophy

The student and his Supervisory Committee prepare a program of study and research. The program will include one principal option and three supporting options in oceanography, and other courses in science and mathematics. The student must pass a General Examination in oceanography and supporting fields. He then completes the research for his dissertation and prepares for his Final Examination.

PHILOSOPHY

Chairman

David Keyt

301 Parrington Hall

Professors

Robert Coburn, Paul Dietrichson, David Keyt, Karl H. Potter, Melvin Rader (emeritus), Robert J. Richman

Associate Professors

John F. Boler, Frederick A. Siegler

Assistant Professors

John P. Burke, Oswaldo Chateaubriand, Kenneth Clatterbaugh, J. Lawrence Crocker, James Mish'alani, Stephen Thomas

Lecturers

John Chambless, Charles E. Marks, Kenneth H. Small

Philosophy is an effort to clarify the concepts and principles presupposed by the main areas of practice and inquiry. The Department of Philosophy accordingly offers courses in logic, ethics, social and political philosophy, epistemology and metaphysics, philosophy of religion, philosophy of science, and aesthetics. In addition, the history of ideas is studied in order to throw light on the contemporary problems encountered in each of the areas of philosophical investigation. For students who plan to teach in this field, programs leading to the doctorate are available. For most students, however, the study of philosophy is valuable as an important contribution to a liberal education.

Students majoring in other fields will find Philosophy 100, 110, 120, 200, 215, 250, 260, 267, 320, and 322 of particular interest.

Undergraduate Programs

Adviser

Kenneth H. Small

327A Parrington Hall

GRADUATION REQUIREMENTS

Bachelor of Arts

The requirements are: 50 credits in philosophy, including 110 or 215*, 120, 320, 322, and at least one from 321, 325, or 326.

* The student will elect one or both.

Honors in Philosophy

Adviser

Kenneth H. Small

327A Parrington Hall

Members of the College of Arts and Sciences Honors Program who fulfill the requirements of that program during the freshman and sophomore years in addition to the following departmental honors requirements receive a bachelor's degree "With College Honors in Philosophy." With the approval of the departmental honors committee, superior students who are not members of the College Honors Program may participate in the departmental honors curriculum and receive a bachelor's degree "With Distinction in Philosophy." Honors students in philosophy must have a grade-point average higher than 3.25 in philosophy courses and must take 480H in the junior and/or senior year. They are also required to take at least two other courses numbered 400 or above, which must be approved by the Departmental Honors Committee. Special honors sections of Philosophy 100, 120, 200, and 215 are regularly offered.

Graduate Programs

Graduate Program Adviser

Oswaldo Chateaubriand

326 Parrington Hall

Master of Arts

Students who intend to work toward advanced degrees must meet the requirements of the Graduate School as outlined in the *Graduate Study* section. Before beginning graduate work, students should have completed an undergraduate philosophy major or the equivalent.

Applicants for admission to graduate degree programs in philosophy are required to submit three letters of recommendation from instructors acquainted with their academic qualifications and a sample of written work in philosophy, such as a term paper. The deadline for submission of applications and supporting documents is March 1. Application for admission to other than the Autumn Quarter will be considered, but the applicants must recognize that all available space may be taken.

The following is a brief summary of departmental requirements. A more complete description of the graduate program and current requirements may be obtained by writing to the Graduate Program Adviser, Department of Philosophy.

Residence and credit requirements include a full academic year of residence, 9 credits per quarter plus 9 thesis credits (36 credits). Demonstration of reading competence in one foreign language, normally French,



German, Latin, or Greek, is required. In addition to the 9 thesis credits, 9 others must be in 500-level courses. The student is required to write a thesis acceptable to his committee, and must pass a final oral examination on his thesis.

Doctor of Philosophy

Normally it is expected that the prospective candidate for the Doctor of Philosophy degree has satisfied all requirements for the master's degree. Students in the Ph.D. program are required to pass the General Examination in four parts covering the fields of logic (this requirement may be satisfied by specified course work), metaphysics and epistemology, ethics and other normative fields, and a selected figure in the history of philosophy. The student is expected to have taken courses and seminars in these fields and his program must be approved by his Supervisory Committee. He also will be required to pass two examinations in one foreign language: besides demonstrating reading competence in French, German, Latin, or Greek (as described above for the master's degree), he must pass a second examination administered by the Department of Philosophy, which will consist of a translation of a passage from a philosophical text. Finally, he must prepare an acceptable dissertation and pass the oral Final Examination on it.

PHYSICAL AND HEALTH EDUCATION

Director

Ruth Abernathy
105 Hutchinson Hall

Associate Director

G. Spencer Reeves
102 Hutchinson Hall

Professors

Ruth Abernathy, Marion R. Broer, Eric L. Hughes, Robert Morford, John A. Torney (emeritus), Ruth M. Wilson

Associate Professors

Theus L. Doolittle, Katharine S. Fox, Dorthalee B. Horne, M. Kathro Kidwell (emeritus), Norman F. Kunde (emeritus), Dorothy G. MacLean, Caswell A. Mills, Clifford L. Peek, Bonnie J. Purdy, G. Spencer Reeves, Joan Skinner

Assistant Professors

Robert W. Buckley, Barbara A. Cooley, Watson B. Hovis, Robert S. Hutton, Sr., Hal A. Lawson, Jobyann Renick, Frank L. Smoll, Marcella Woods

Lecturers

Robert Hendershott, V. Maryann Waltz

Associate

Robert Davidson

Undergraduate Programs

Advisory Office

101 Hutchinson Hall

The School of Physical and Health Education offers a program of instruction in dance, sports, and other movement activities for all college students, as well as programs of study in three separate fields: Physical Education, Health Education, and Recreation Planning and Administration. The degree of Bachelor of Arts is awarded upon completion of graduation requirements.

Curriculum in Physical Education

Students majoring in physical education select an emphasis in one of two curricular tracks. The human movement studies track is designed for students in Arts and Sciences who plan to continue in graduate study in a selected aspect of inquiry. The alternate track is for students in the Colleges of Arts and Sciences or Education who plan to teach physical education in elementary or secondary schools.

Programs of study include basic courses in the art and science of human movement, a pattern of approved specialization courses, and a group of courses in related fields. The requirements are as follows:

Human Movement Core: Physical Education 250, 325, 331, 332, 333, 350, and 410.

Specialization: From 26 to 31 credits are required in approved physical education, dance, or cognate courses. Human movement studies programs for students pursuing depth study in a specific aspect of movement inquiry, but not meeting requirements for a teaching credential, include Physical Education 490, 498 or 499, a course in research instrumentation and 17 approved credits in courses related to the specific area of interest. Students planning to teach physical education in elementary or secondary schools meet requirements for the teaching major or minor as described in the *College of Education* section of this catalog.

Related Fields: Zoology 118 and 119 or 208, Biological Structure 301, Psychology 100, Sociology 110, and Health Education 292 or current advanced first-aid certification.

Curriculum in Health Education

Programs of study in health education include a core of courses, approved elective or specialization courses for students interested in various aspects of health education, and foundation courses from related fields. The requirements are noted below.

Health Education Core: Health Education 250, 292 or current advanced first aid certification, 350, 351.

Specialization: Programs for students pursuing studies in a specific aspect of health education are planned in conference with a health education adviser.

Students in *school health education* complete, in addition to the core, Health Education 352, 353 and at least 26 additional approved credits in health education, nutrition, public health, psychology, sociology, communications, or related cognate courses.

Students planning to teach in elementary or secondary schools select course work to complete requirements for the teaching major or minor as described in the *College of Education* section of this catalog.

Students in *community health education* complete, in addition to the core, Epidemiology and International Health 420, Environmental Health 422, Health Services 323 or 424, 472, 482 and at least 15 additional approved credits in health education, nutrition, psychology, sociology, communications, or related cognate courses.

Foundation Courses: Biological Structure 301, Microbiology 101 or 301, Psychology 100, Sociology 110, and Zoology 118 and 119 or 208

Curriculum in Recreation Planning and Administration

Programs of study include recreation theory and practice, courses in related fields, and specialization courses. The requirements follow.

Recreation Core: Recreation Planning and Administration 314, 324, 334, 344, 354, 434, and 454

Related Fields: Biological Structure 301; Psychology 100, 306; Physical Education 325; Sociology 110, 240; Speech 103, 373; Zoology 118

Specialization: The minimum requirement is 20 credits in the areas of art, music, dance, drama, or sports, including at least one course in four of the five areas.

Honors in Physical Education or Health Education

Honors sections of special studies and undergraduate research courses provide an opportunity for outstanding upperclass students to pursue a selected topic in depth.

Graduate Programs

Graduate Program Advisers

Ruth Abernathy
105 Hutchinson Hall

G. Spencer Reeves
102 Hutchinson Hall

The School of Physical and Health Education offers courses leading to the degree of Master of Science with specialization in physical education or in health

education. The degree of Master of Science in Physical Education is also available.

Requirements for admission are the general requirements of the Graduate School, the aptitude portion of the Graduate Record Examination, letters of recommendation, background in the biological and social sciences, and an undergraduate concentration in an appropriate field.

Programs in physical education or in health education are designed, respectively, to increase the scope and depth of understanding of the bodies of knowledge concerning moving man or the health sciences. Specifics as to area and other requirements may be obtained upon request.

Requirements for advanced degrees are flexible. The student, in consultation with a graduate program adviser, selects one or more of several emphases around which his program is designed.

Programs for the master's degree are designed to be completed in a year of full-time study by students who hold a baccalaureate degree with a strong background, depending on the area of specialization. Two full years of study may be necessary for the students who enter with less undergraduate preparation or who hold appointments as teaching assistants.

A number of assistantships are available that enable the superior graduate student to gain valuable teaching experience while pursuing graduate study. Applications should be addressed to the University of Washington School of Physical and Health Education, Seattle, Washington 98195.

PHYSICS

Chairman

Ronald Geballe
215 Physics Hall

Professors

Arnold B. Arons, Marshall Baker, John S. Blair, David Bodansky, Henry L. Brakel (emeritus), Lowell S. Brown, Kenneth C. Clark, J. G. Dash, Hans G. Dehmelt, George W. Farwell, Ronald Geballe, James B. Gerhart, Isaac Halpern, Joseph E. Henderson, Ernest M. Henley, Jere J. Lord, Seth H. Neddermeyer, Fred H. Schmidt, Edward A. Stern, Edwin A. Uehling (emeritus), Clinton L. Utterback (emeritus), Lawrence Wilets, Robert W. Williams

Associate Professors

David G. Boulware, Victor Cook, John G. Cramer, E. Norval Fortson, Paul M. Higgs (emeritus), Robert L. Ingalls, Ray W. Kenworthy (emeritus), Henry J. Lu-



batti, Mark N. McDermott, Philip C. Peters, Alberto Pignotti, Robert D. Puff, Joseph E. Rothberg, Llewellyn A. Sanderman (emeritus), John F. Streib, Jr.

Assistant Professors

Eric G. Adelberger, Naren F. Bali, Samuel C. Fain, Larry D. Kirkpatrick, Jesse J. Sabo, Jr., Michael Schick, Oscar E. Vilches

Lecturers

Richard J. Davisson, Lillian C. McDermott

Director of Nuclear Physics Laboratory

William G. Weitkamp

Senior Research Associates

Kei Moriyasu, William G. Weitkamp

Research Associates

Michael H. Bancroft, Pierre L. Bastien, Stephen Blaha, Michael Bretz, David F. Burch, Yi-Chen Cheng, Martin D. Cooper, Philip A. Ekstrom, John T. A. Ely, Peter K. Haff, Michael D. Hasinoff, Guthrie Miller, Ulrich Mosel, William J. Pardee, Jørgen Pedersen, Ekkehard Preikschat, Willibrord Reisdorf, Francois Rohrbach, Robert Rollefson, Henry F. Romer, Joseph A. Rudnick, Uday Sukhatme, Robert S. Van Dyck, David J. Wineland, Simon S-L Yu

Associate

Patricia Autry

Physics is the study of the fundamental structure of matter and the interactions of its constituents. Physicists are concerned with the continuing development of concepts needed for a precise description of nature and with experiments to test such concepts.

For students of the liberal arts, the study of physics provides an introduction to modern ideas about the most basic and elemental aspects of nature. For students in all scientific and technical fields, physics is an indispensable tool. Students majoring in physics are preparing for careers in teaching, in research, and in industry.

The Department of Physics offers courses leading to the degrees of Bachelor of Science, Master of Science, and Doctor of Philosophy. Undergraduate majors obtain a basic preparation in the principal fields of physics augmented by advanced work in physics or closely allied subjects. By his choice of courses, a student may elect to prepare for graduate study in physics, or he may select a program of study emphasizing interdisciplinary study based on a background in physics. In addition, the Department offers major and minor academic fields for students in the College of Education.

Recommended preparation for undergraduate physics majors includes high school physics and 4 units of high

school mathematics. High school chemistry also is desirable. Students who enter without this preparation may be delayed in their progress toward graduation.

Undergraduate Programs

Adviser

J. B. Gerhart

215 Physics Hall

A program of study in physics may vary considerably in extent, depending upon the values which the student wishes to derive from his education. The available choices include an adequate basic education in physics which may serve as the basis of a program in liberal education, an optimum preparation for graduate study in physics, or programs combining a core of physics courses with additional work in related fields such as astronomy, engineering, geophysics, chemical physics, history of science, and many others.

GRADUATION REQUIREMENTS

Bachelor of Science

The departmental requirements for the physics major include the following:

1. Core courses in physics required of all majors: 121, 122, 123; 131, 132, 133; 221, 222, 223; 231, 232; 321, 322 (36 credits).
2. At least 3 credits selected from upper-division lecture courses in modern physics (324, 325, 327, 421, 422, 423 or other approved courses).
3. At least 3 credits selected from upper-division laboratory courses (331, 405, 431, 432, 433).
4. At least 8 additional credits selected from upper-division physics courses or from approved courses in cognate subjects. A list of approved cognate courses is available from the Department of Physics.
5. Mathematics 124, 125, 126, 205, 238, 327, 328.
6. At least 9 credits chosen from natural sciences other than physics or mathematics, or from courses in the history or philosophy of science. Courses elected to fulfill this requirement may not also be used to fulfill requirement 4 above.

No grade less than C is acceptable in courses taken to fulfill requirements 1, 2, 3, or 4.

Students preparing for graduate study in physics are strongly advised to complete, in addition to the core courses listed in requirement 1, the following physics and mathematics courses: Physics 323, 324, 325, 331, 421, 422, 423, 424, 425, 426, 431, 432, 433, (39 credits) and Mathematics 427, 428, 429 (9 credits).

Honors in Physics

Adviser

P. C. Peters

259 Physics Hall

With the approval of the Department, superior students may be selected to participate in the departmental honors curriculum. Members of the College of Arts and Sciences Honors Program majoring in physics, who fulfill the requirements of that program during their freshman and sophomore years, may be selected to participate in the departmental honors curriculum to become candidates for the bachelor's degree "With College Honors in Physics." Undergraduates majoring in physics who are selected to participate in the departmental honors curriculum but who are not members of the College Honors Program may be recommended for the degree of Bachelor of Science "With Distinction in Physics."

A student may be selected to participate in the physics honors curriculum at any time in his undergraduate program, though such selection ordinarily is not made until late in the sophomore year. Selection is based upon academic excellence in physics and upon promise of developing into an original and productive scientist.

To be recommended for an honors degree in physics, students must have (1) been selected to participate in the physics honors curriculum no later than the first quarter of their senior year; (2) completed an approved course of study to the satisfaction of the department by the time of graduation; (3) completed any additional requirements set by the College of Arts and Sciences.

Because the needs of honors students are diverse, there is no specified program of studies for students in the physics honors curriculum. Instead, it is required that the student's course of study: (1) be appropriate to his special abilities; (2) provide a sound basis for further study of physics or other related sciences; (3) include the senior honors seminar, Physics 485H, 486H, 487H; and (4) include a minimum of 3 credits of independent study or research (the special honors section of Physics 401, 402, 403). In addition, it is strongly recommended that each candidate for an honors degree take the special honors section of Physics 121, 122, and 123.

Because the requirements listed above are expressed only in broad terms, the following comments are offered to clarify the intent of the physics honors curriculum. A typical physics honors candidate will achieve a grade-point average in physics courses of 3.30

or better, and an over-all grade-point average of 3.00 or better. His course of study usually will encompass that described in the preceding section as preparation for graduate study.

Graduate Programs

Graduate Program Adviser

J. S. Blair

215 Physics Hall

The Department of Physics offers programs leading to the degrees of Master of Science and Doctor of Philosophy. Specific departmental requirements are described briefly below. More complete information can be obtained by writing to the Graduate Program Adviser.

Undergraduate preparation is expected to include upper-division courses in mechanics, electricity and magnetism, statistical physics and thermodynamics, modern physics including an introduction to quantum mechanics, and advanced laboratory work. Preparation in mathematics should include study of vector analysis, complex variables, ordinary differential equations, Fourier analysis, boundary value problems, and special functions. A deficiency among these may delay completion of a degree by as much as one year.

When the graduate student first arrives he is assigned an individual adviser from the faculty. The student should consult with his adviser on matters concerning his over-all program and on any other topics concerning his work at the University. The adviser serves as an important contact between the student and the Department.

At a later stage, the student usually begins to work on a research project with a faculty member other than his original adviser. This faculty member then will serve as adviser. The Graduate Program Adviser of the Department, as well as the original adviser, should be notified of such changes.

In accordance with Graduate School procedure, a Supervisory Committee will be appointed for each prospective Ph.D. candidate. The adviser, ordinarily, will be the chairman of this committee.

Before admission, a prospective student is expected to have taken the Advanced Physics part of the Graduate Record Examination (GRE), and admission to the department is based partially on the performance in this examination. In some cases where there is inadequate preparation but other evidence of ability in physics, admission is granted without a strong GRE score. In this event, the student must pass a preliminary examination, normally during the first quarter of his grad-



uate study. This examination is designed to assess the student's knowledge and understanding of the material in a normal undergraduate physics program. It is given in both the Autumn and Winter Quarters. The Autumn Quarter examination consists of the Advanced Physics part of the GRE while, in order to provide an alternative evaluation, a departmental examination is given in the Winter Quarter.

Students who pass the preliminary examination with distinction and receive a grade of A, along with those with a strong GRE score at admission, may proceed in a program leading either to the degree of Doctor of Philosophy or the degree of Master of Science. Students who receive a grade of B on the examination may proceed in a program leading only to the degree of Master of Science. A student who receives a grade of B or who fails the examination may repeat it only once except by special departmental approval.

Master of Science

A student working for this degree must satisfy the following requirements: (1) A minimum of 36 approved credits must be submitted, of which at least 18 must be in courses numbered 500 or above. These 18 credits must include a minimum of 3 credits in Physics 600 (for which a faculty sponsor is necessary), and a minimum of 12 credits in other physics graduate courses. No thesis is required and there is no foreign language requirement. (2) The student must pass a Final Examination which usually is oral.

Students working toward a master's degree in another field who wish to have a minor in physics must submit 9 credits in courses numbered 300 or above and 9 credits in courses numbered 400 and above.

Doctor of Philosophy

While no courses are required explicitly, the student is expected to obtain, by virtue of studies here or elsewhere, a background in physics equivalent to that provided by the following sequence of basic graduate courses: 505, 506, Analytical Mechanics; 513, 514, 515, Electromagnetism and Relativity; 517, 518, 519, Quantum Mechanics; 524, 525, Thermodynamics and Statistical Mechanics; 527, 528, 529, Current Problems in Physics; and 566, Advanced Quantum Mechanics. In addition, the Department offers many specialized courses from which the student, in consultation with his adviser, will select those appropriate to his interests. Entry into research usually is made by enrollment in 600, Independent Study or Research, by arrangement with individual faculty members at the initiative of the student. The student is expected to maintain a record of satisfactory quality (at least B level) in the courses he attempts.

A student is encouraged to take courses in fields other than physics. This outside work may be presented as either a minor or as individual courses. Details should be arranged by the student in consultation with his adviser or supervisory committee. Particular attention is called to offerings in astronomy, atmospheric sciences, biophysics, chemistry, electrical engineering, geophysics, and mathematics.

Prospective candidates for the degree of Doctor of Philosophy must pass, successively, a written qualifying examination, a General Examination for admission to candidacy, and a Final Examination. The qualifying examination is designed to assess the depth of the student's knowledge of the principal branches of physics. A student in the program leading to the Ph.D. is expected to take the qualifying examination in his second year of regular graduate study. The qualifying examination is given in the Autumn Quarter, and again in the Spring Quarter each year.

In the oral General Examination, a student is examined on topics related to the area of physics in which he plans to do his dissertation research. In order to take this examination, a student must have passed the qualifying examination and, ordinarily, he must have been accepted by a graduate faculty member as a research student. The General Examination should be taken as soon as possible after passing the qualifying examination, usually early in the third year of regular graduate study. On passing it, the student is admitted formally to candidacy for the Ph.D.

In recognition of the fact that teaching can play an important part in the education of a physicist, the Department requires teaching experience of all prospective candidates for the Ph.D. degree.

The Ph.D. Candidate is required to conduct an original and independent investigation in one of the fields of physics. Results of this research are submitted as a dissertation. In the Final Examination, the Candidate presents these results orally and is examined in his field of research.

Each student bears responsibility for being informed of the dates on which the examinations are offered and for planning his own program so that he can take the examinations at appropriate times.

If physics is to be used as a minor subject by a student seeking the doctor's degree in another department, the student should acquire training equivalent to a bachelor's degree in physics and, in addition, take three graduate courses in physics.

POLITICAL SCIENCE

Chairman

Kenneth Dolbeare

201 Engineering Annex

Professors

Hugh A. Bone, C. W. Cassinelli, Kenneth C. Cole (emeritus), Kenneth M. Dolbeare, William J. Gore, Dell G. Hitchner, Morton Kroll, Charles E. Martin (emeritus), George Modelski, John S. Reshetar, Jr., George A. Shipman, Donald H. Webster (emeritus)

Associate Professors

Paul R. Brass, Wayne L. Francis, Alex Gottfried, Donald C. Hellmann, Daniel S. Lev, Philip J. Meranto, Walter L. Riley, Peter H. Rohn, Stuart A. Scheingold, James R. Townsend

Assistant Professors

James J. Best, Trevor L. Chandler, Ruth L. Horowitz, Herbert M. Kagi, Judith L. Lamare, Robert O. Myhr, Allan Pelowski, David F. Schuman, Frances Svensson, James E. Todd

Instructors

Steven M. DeLue, Gary A. Duck

Lecturers

Lynné Iglitzin, Theresa Aragon de Shepro

The Department's primary goal is to provide one component of a basic liberal arts education to undergraduate students. More specifically, its mission is to introduce students to politics—to public policies, structures, values, and processes—past and present. In some cases, this may result in engaging students actively in the political world. More often, it provides students with the kinds of training that will enable them to understand and analyze political phenomena in a logically rigorous and value-sensitive way. It is for this more general purpose, rather than immediate vocational applications, that most students elect courses in political science. For those students planning governmental careers or teaching, political science may become a professional field.

In addition to its undergraduate teaching responsibilities, the department is committed to adding to the available body of knowledge and techniques of inquiry in the field of political science. The graduate program is at the juncture of these two goals. Graduate students are trained to become professional political scientists; through them the Department hopes to add to the progress of the discipline and advance its capacity to effectively analyze and understand political life. At the same time, graduate study is also an opportunity for students to learn about and gain experience in teaching.

The Department of Political Science offers courses leading to the degrees of Bachelor of Arts, Master of Arts, and Doctor of Philosophy. It offers major and minor academic fields for students in the College of Education; it also cooperates with the College of Architecture and Urban Planning in a program leading to the degree of Master of Urban Planning. See also the sections for the *College of Education* and the *College of Architecture and Urban Planning*.

Undergraduate Programs

Advising Office

202 Engineering Annex

GRADUATION REQUIREMENTS

Bachelor of Arts

Maintenance of a better than C average in political science courses is expected of every political science major. Accordingly, no student whose cumulative grade-point average in political science courses taken at this University is less than 2.25 may take his Bachelor of Arts degree in any political science curriculum.

A student majoring in political science must complete a course of study designed to meet his particular needs, developed by him, and approved by the Department. In addition to meeting general University and College requirements, the program must include a minimum of 50 credits in political science. The program should include the introductory course, Political Science 101. The remaining credits must be distributed among the following three broad fields to the extent of at least 10 upper-division credits in each: political theory and public law; government, politics, and public administration; comparative government and international relations.

Knowledge of at least one modern foreign language or of statistics is recommended.

Honors in Political Science

Adviser

Dell G. Hitchner

217 Engineering Annex

Members of the College of Arts and Sciences Honors Program who fulfill the requirements of that program during the freshman and sophomore years, in addition to the following departmental honors requirements, receive a bachelor's degree "With College Honors in Political Science." With the approval of the departmental honors committee, superior students who are not members of the College Honors Program may participate in the departmental honors curriculum and receive a bachelor's degree "With Distinction in Political Science."

Honors sections are available in the introductory courses. Majors in political science are eligible to par-



ticipate in the honors program at the beginning of their junior year, but no later than the second quarter thereof, if they have maintained a general grade-point average of 3.00, and have maintained in at least 10 credits of political science a grade-point average of 3.25. Work of similar distinction must be continued if the student is to remain in the program.

Honors students are required to complete 10 credits in the Honors Seminar, 398H, although with the approval of their adviser, 5 credits in the honors section of 499 may be substituted for five of these. These credits may be used as electives in the normal major program. Honors students must also present to the departmental honors committee, no later than the sixth week of their final quarter before graduation, a research paper or essay, and must pass with distinction a comprehensive examination, which will be scheduled according to need at the end of each quarter.

Graduate Programs

Graduate Program Adviser
Stuart A. Scheingold
221 Engineering Annex

The Department of Political Science offers a program of studies leading to the degrees of Master of Arts and Doctor of Philosophy. Admission to these programs requires the completion of an undergraduate major in political science or its equivalent. Although the Department has a number of standard requirements for higher degrees, every effort is made to devise programs that will fit the needs and interests of the individual student.

PROGRAMS OF STUDY

Master of Arts

A minimum of 36 credits, 18 of which must be taken at the 500 level or above, is required for the Master of Arts degree. In addition, the student must submit an essay of distinction and pass a comprehensive examination in any three of the following areas of political science: political theory and methodology; public law; comparative government; special area studies; public administration; international relations; American government and politics; urban, state, and regional government. Appropriate courses from outside the discipline of political science may be included in any of these areas.

Master of Public Administration

A curriculum leading to this degree is offered by the Graduate School of Public Affairs; see the *Graduate School of Public Affairs* section in this catalog.

Doctor of Philosophy

The Doctor of Philosophy degree requires a minimum

of 108 credits, including 36 credits allowed for the dissertation. Of the remaining 72 credits, at least 48 must be earned at the 500 level or above. Upon completion of the 72 credits, the student must pass a comprehensive examination covering four fields. In addition to using courses in disciplines other than political science to help satisfy these field requirements, the student may, with the approval of his supervisory committee, prepare one of the four fields entirely in another related discipline. The student, in planning his program, may choose from among the following seven areas of political science: political theory and methodology; public law; comparative government and special area studies; public administration and comparative administration; international politics, international law, international organization, and foreign policy; American government, politics, and public policy; and regional, state, metropolitan, and urban government. With the approval of his committee, the student may use at most one of these areas—normally that in which he writes his dissertation—to satisfy two of his field requirements. Each program should provide as wide as possible coverage of the discipline of political science.

PSYCHOLOGY

Chairman

Earl B. Hunt
M40 Denny Hall

Professors

Joseph Becker, Robert C. Bolles, Allen L. Edwards, Erwin A. Esper (emeritus), Fred E. Fiedler, Paul E. Fields, A. Paul Horst (emeritus), Earl B. Hunt, Arthur L. Kobler (clinical), Robert B. Lockard, Roger B. Loucks (emeritus), Arthur A. Lumsdaine, Ralph M. Reitan, Halbert B. Robinson, Gene P. Sackett, Irwin G. Sarason, Gilbert Sax, Moncrieff H. Smith, Jr., Ezra Stotland, Charles R. Strother, Nathaniel N. Wagner, Dael Wolfe, Lloyd S. Woodburne

Associate Professors

Lee R. Beach, Gordon Bermant (affiliate), John W. Broedel, John E. Carr, Sidney S. Culbert, Hans O. Doerr, Robert J. Douglas, Samuel Goldenberg (clinical), George P. Horton (emeritus), Clifford E. Lunneborg, Jr., Patricia W. Lunneborg, Walter L. Makous, Benjamin B. McKeever, Davida Y. Teller

Assistant Professors

John Alcock, Samuel A. Bobrow, Lance K. Canon, C. Richard Chapman (research), Philip S. Dale, Robert F. Fallis (research), Donald L. Finkel, Scott C. Fraser, Robert J. Kohlenberg, Terence Mitchell, M. Keith Moore, Thomas O. Nelson, Gerald R. Oncken, Robert

R. Pagano, Richard M. Rose, Sidney R. Roth, Ronald G. Slaby, Ronald E. Smith, Stanley Sue, Joan S. Zaro

Lecturers

Mark L. Berman, Irwin S. Dreiblatt, Robert H. Fenner, Wilbert E. Fordyce, Robert R. Frost, Thomas F. Hodgson, Seward A. Moot

Research Associates

Nancy A. Frost, Nancy M. Robinson

The curricula and associated research activities in psychology stem from the dual scientific and professional character of the discipline: (1) Psychology as a branch of basic science, which seeks to describe and understand the behavior of organisms, both human and infra-human, normal and abnormal; and (2) the technology and profession of psychology, which further seeks to apply its basic findings and techniques to interpret human experience coherently, to predict and develop human capabilities more efficiently, and to improve man's ability to interact effectively with his physical and social environment.

Psychology is generally concerned with the individual organism rather than the collective or group as the primary unit of analysis. It attempts to increase our knowledge of how individuals are motivated; how they perceive the world; how they learn and develop over the course of their life histories; how they choose among alternative courses of action; and how they perform in groups and social organizations. The Department of Psychology offers upper-level courses ranging across these different aspects of behavior.

Basic courses in psychology (such as Psychology 100, 101, 102, 201, 202, 203, 205, 211, 212, 222, 302, 306, 314, etc. are intended to provide a foundation for those wishing to take advanced work in psychology as undergraduate or graduate majors or minors. The basic courses also serve those students for whom obtaining a better understanding of behavior is part of a liberal education. Some of these courses (e.g., 100, 205, 305, 306) should provide an orientation helpful in daily life and develop a basis for understanding and utilizing the services of psychologists in relation to other fields of professional endeavor. Of special interest are a few new courses designed specifically to deal with contemporary human and social problems (210, 250, 260, 443).

Although the undergraduate offerings of the Department do not train the student fully for any particular occupational role, certain courses are of value to students planning careers in the biological sciences, sociology, economics, political science, business and industry, the medical and legal professions, teaching, nursing, and social work.

Students interested in psychology as a professional career commonly spend from three to five years in graduate training. A variety of experimentally oriented undergraduate courses is offered for students planning to proceed to graduate work in psychology. These courses are designed to further an understanding of fundamental principles in psychology, its research findings, and the means by which psychological knowledge is acquired.

Undergraduate Programs

Adviser

Patricia W. Lunneborg
M30 Denny Hall

The Department of Psychology offers undergraduate programs leading to the degrees of Bachelor of Arts and Bachelor of Science. Also, the Department offers major and minor academic fields for students in the College of Education (see the *College of Education* section). Students planning a major in this Department should expect to complete Psychology 100 or 101 or 102, 201 or 202 or 203, and 211 or 302 as early as possible.

The Bachelor of Science curriculum is intended primarily to prepare the student for graduate study, which is almost mandatory for a professional career in psychology. It has been designed to meet the minimal requirements of the hundreds of master's and doctoral degree programs across the country. The Bachelor of Arts degree provides a broad background in psychology, but by itself does not qualify a student for vocational or further educational goals. However, through electives in other areas, students in the Bachelor of Arts program can prepare for vocations which will combine their general background in psychology with specialized training in such fields as education, personnel management, communication, health sciences (clinical or technical), social work, engineering, and others. Courses in other departments cannot be counted as psychology courses.

GRADUATION REQUIREMENTS

Bachelor of Science

The Bachelor of Science degree currently requires introductory psychology (exact course or courses available from psychology advisory office); Psychology 201, 202 or 203, 302, 314, and 499. A minimum of 50 credits in psychology is required with a minimal grade-point average of 3.30, including the above specified courses listed above. A cumulative overall grade-point complete Mathematics 105, 106, and 124 or 157, and earn at least 10 additional credits in natural science beyond the college distribution requirement, i.e., 10



credits of either biology, zoology, physics, chemistry, or mathematics in addition to the required mathematics courses listed above. A cumulative overall grade-point average of 3.00 is required. Transfer students must meet all of the above requirements, but depending on the undergraduate adviser's recommendation, as many as 35 credits in psychology might be taken prior to entering the University of Washington.

Students intending to seek advanced training are advised to acquire a good reading knowledge of at least one language as undergraduates, preferably French, German, or Russian.

Bachelor of Arts

The Bachelor of Arts degree is based upon the concept of flexibility, of fitting students with courses designed to provide a broad background in academic psychology and specialized training in areas of particular interest and competence. It is not intended to prepare students for graduate work in psychology. No fixed curriculum is designated for the degree requirement. The requirements are 50 credits of psychology courses from departmental undergraduate offerings with a minimum grade-point average of 2.00. These must include introductory psychology (exact course or courses available from the psychology advisory office); either Psychology 201 or 202 or 203; either of the statistics sequences (211 and 212, or 302 and 314). A number of courses have stated prerequisites; therefore, a student's program should be planned with some care. Annual mimeographed leaflets issued by the Department should be consulted in respect to further details and changes in requirements subsequent to issuance of the *General Catalog*.

Honors in Psychology

Adviser

Richard M. Rose
M40 Denny Hall

In association with the College of Arts and Sciences Honors Program, the Department offers an enriched course of study designed to meet the needs of high-ability students. Special honors sections of 101 and 102 (Psychology as a Social Science and Psychology as a Natural Science), of 201, 202, 203 (Laboratory in Human Performance, Laboratory in Animal Learning, Laboratory in Animal Behavior), and of certain other courses are available to all students of honors caliber regardless of field of major interest. The psychology honors/distinction program at the junior-senior level includes an emphasis on individual study and research participation.

Candidates for the Bachelor of Science and the Bachelor of Arts "With College Honors in Psychology" must

(1) fulfill the requirements of the College Honors Program; (2) fulfill the departmental requirements for the major corresponding to the particular degree being sought, with the exception that those seeking the Bachelor of Arts degree must elect at least 15 credits at the 400 level in psychology; (3) elect the 302, 314 statistics sequence; (4) satisfactorily complete the honors seminars (three quarters each of 350H and 450H); (5) complete the junior year independent study as specified by the departmental honors adviser; (6) satisfactorily complete 6 credits of 498 or 499 during the senior year, culminating in the senior honors thesis; and (7) maintain a minimal grade-point average of 3.50 in all courses in psychology and of 3.00 in courses in all other disciplines.

Students who are not participating in the College Honors Program may request acceptance into the Department Distinction Program. Students in the Distinction Program must fulfill exactly the same departmental requirements as the College Honors students. These students will receive the Bachelor of Arts or Bachelor of Science degree "With Distinction in Psychology."

Graduate Programs

Graduate Program Adviser

Robert C. Bolles
M40 Denny Hall

Graduate work in the Department of Psychology is organized primarily as a program for the Doctor of Philosophy degree, and is designed to prepare psychologists as researchers, college and university teachers, and professional psychologists.

Admission

The basic requirements for admission to graduate study in Psychology are adequate intellectual ability and the desire for a career dedicated to the science and the profession. Applicants must have a bachelor's degree and meet other general requirements of the Graduate School (see *Graduate Study* section). An undergraduate degree in psychology is not required. Entering students should have some preparation in the biological or social sciences.

The applicant must take the aptitude portion (verbal and quantitative) of the Graduate Record Examination, which is administered approximately every two months by the Educational Testing Service. Registration for this examination is made by writing directly to Educational Testing Services, Box 955, Princeton, New Jersey 08540, or 1947 Center Street, Berkeley, California 94704. The applicant is urged to take this exam-

ination as early as possible. Information and application materials for admission can be obtained directly from the Selection Committee, Department of Psychology. New students are usually admitted to the departmental graduate program only during Autumn Quarter.

Most graduate students admitted are offered some form of financial support. Entering students are encouraged to apply for individual predoctoral fellowships awarded by the National Science Foundation and U.S. Public Health Service. The department has available a number of fellowships and traineeships that it may award to students, and also employs students as teaching and research assistants. Additional summer support in the form of teaching and research assistantships is available for a considerable number of students.

PROGRAMS OF STUDY

Each incoming graduate student is assigned to a faculty member who will act as his adviser. This assignment is not necessarily meant to be a permanent one and may be changed later in the year if this proves to be desirable.

Master of Science

The Department of Psychology does not admit students to its graduate program whose sole intention is to obtain a master's degree, but upon completion of the first year graduate program, an appropriate research program, and the general requirements of the Graduate School students may elect to apply for the Master of Science degree.

Doctor of Philosophy

For purposes of graduate instruction, the Department is organized into several content areas. These include animal behavior; physiological, human experimental, quantitative, developmental, social and clinical psychology; and personality. The essential requirements include minimal competencies in four of the content areas mentioned above, experimental design, minor and major area requirements, independent research, and, finally, the General Examinations, the dissertation, and the Final Examination.

The Department of Psychology has no foreign language requirement for the doctoral degree.

During his first year a student must demonstrate competence in experimental design (Psychology 514 and 515); must complete two of the area's minimal competency requirements; and must enroll for at least 3 credits in independent predoctoral research. During the second year of graduate work the student should complete the remaining minimal competency requirements and continue with his independent research.

Students must maintain a B average, and in satisfying minimal competency and minor requirements all work must be B level or higher.

During the third and fourth years the student normally devotes himself primarily to research which culminates in his doctoral dissertation. No later than the end of his third year a student must have completed the minor area requirement that the faculty regards as evidence that the student can teach in this area at the undergraduate level.

Special Psychology Programs

The Department offers a program of graduate study in clinical psychology that is accredited by the American Psychological Association. A predoctoral internship is required. The program is designed, also, to provide the student with the special skills in research which are essential for the discovery of new knowledge and methods of prevention, assessment, and treatment. The increased facilities provided by the new Center for Child Development and Mental Retardation, together with related staff increases in both child clinical and developmental psychology, make possible a special emphasis, within the clinical program, on child clinical psychology.

In addition to the doctoral programs in psychology, a joint program leading to the degree of Doctor of Philosophy in physiology and psychology is offered by an Interdisciplinary Group of the Graduate School composed of certain members of the Department of Psychology and the Department of Physiology and Biophysics. The program is described in the *Interdisciplinary Graduate Degree Program* section of this catalog.

ROMANCE LANGUAGES AND LITERATURE

Chairman

Constantine G. Christofides
C104C Padelford Hall

Professors

Constantine G. Christofides, Jean F. David, Lionel J. Friedman, Carlos García-Prada (emeritus), Abraham C. Keller, Edith Kern, Wolfgang Leiner, Howard L. Nostrand, Antonio Pace, Marcelino Peñuelas, Sol Saporita, Joseph Sommers, William E. Wilson (emeritus)

Associate Professors

Antonio Antelo, Heles Contreras, A. Emerson Creore, R. C. Dale, Robert J. Ellrich, Victor E. Hanzeli, Michael P. Predmore, Fernando G. Salinero, Anibal Vargas-Barón, Clotilde M. Wilson

**Assistant Professors**

James Algeo, Farris Anderson, Edward Baker, Rodney Bodden, Thomas Drury, W. H. W. Field, Pia Friedrich, Michael Herschensohn, Louisa Jones, Jurgen Klausenburger, Jacqueline Leiner, George Shipley, David Thompson, Richard Vernier, W. Victor Wortley

Within the large family of Romance languages, those which are most widely spoken and which have the richest literatures are French, Spanish, Italian, and Portuguese. In each of these, the Department offers an undergraduate program combining the acquisition of language skills (speaking, comprehension, reading, writing) with the history and the critical examination of literature.

On the graduate level (and in some cases in upper-division undergraduate work), advanced study is possible in several areas: history of literature and literary criticism; analysis and structure of the separate Romance languages, their historical development, interrelations, and relations to other languages, as well as descriptions of the cultural context essential to an understanding of a language and its literature.

The study of a foreign language and literature forms an important part of any student's general education. Pursued as a vocational interest, it may lead to careers in international political, legal, business, and professional relations, and to teaching at all levels from the elementary grades to the graduate school.

The Department of Romance Languages and Literature offers courses leading to the degrees of Bachelor of Arts, Master of Arts, and Doctor of Philosophy.

Major and minor academic fields for the Provisional Teaching Certificate are offered in French and Spanish. Candidates for the certificate may major in this Department as students in either the College of Arts and Sciences or the College of Education (see the *College of Education* section). A curriculum in Latin American Studies is provided by General Studies (See *Interdepartmental Programs* section).

Any of the prerequisites for courses in this Department may be waived at the adviser's discretion. Students with A or high B standing in elementary and intermediate courses in this Department are encouraged to skip one or more quarters between 101- and 301, or to enroll in the honors sections.

Undergraduate Programs

Advisory Office
C108 Padelford Hall

Advisers

R. C. Dale (French)
George Shipley (Spanish)
Pia Friedrich (Italian)
Jurgen Klausenburger (Romance Linguistics, 1972-73)
Victor Hanzeli (Romance Linguistics, 1973-74)

GRADUATION REQUIREMENTS**Bachelor of Arts**

A Bachelor of Arts degree may be obtained with a major in French, Spanish, Italian, Portuguese, or Romance linguistics. The general requirements for an undergraduate major in a Romance language are proficiency in the language and knowledge of the literature and culture of France, the Hispanic people, Italy, or Portugal. The curriculum for the undergraduate major in Romance linguistics places its main emphasis on language and linguistics, rather than (but not to the exclusion of) literature. The following programs are designed to develop the required proficiency in the various fields.

French Major

A minimum of 51 credits of course work (or equivalent) in French, beyond the level of 222. Required are: French 301, 302, and 303; 9 credits of 350-level literature courses; 410, 411, and 412; Romance 401 or French 403; French 409; 12 additional credits of 400-level courses, including at least 6 in literature. (The last mentioned 12 credits on the 400 level may not be transfer credits or courses in translation. Teaching majors may satisfy up to 6 credits of this 12-credit requirement by taking Educational Curriculum and Instruction 332 or 333 and/or French 474.)

Spanish Major

A minimum of 45 credits of course work (or equivalent) in Spanish on the 300 and 400 levels, may include credit for Romance 401. Required are: Spanish 301, 302, and 303; two courses chosen from 350, 351, and 352; 304, 305, and 306; 409 or Romance 401; 15 credits, none of which may be transfer credits, in literature courses numbered above 400. Information on alternate ways of satisfying the 400-level requirement is available from the Spanish adviser. (See also Latin American Studies, *Interdepartmental Programs* section.)

Italian Major

A minimum of 39 credits of course work (or equivalent) beyond the level of 203. Required are: Italian 301, 302, 303, 304, 305, and 306; 6 credits in 327; Italian 401; 12 credits, none of which may be transfer credits, in literature courses numbered above 400.

Portuguese Major

The Portuguese major consists of an individualized program of courses selected from those listed under the

departmental heading, and may include supervised study and exercises in the Language Laboratory.

Romance Linguistics Major

Two college years (or equivalent) of study in each of two Romance languages is required. Required courses beyond this prerequisite are: 20 credits in third-year language courses in two Romance languages (recommended division: 10 each); 15 credits in literature courses, including a whole survey sequence; two courses in language structure (400 level); Romance 401 and 402; Spanish or French 474; a senior essay (2 credits). Recommended electives: general linguistics courses. Thorough preparation for the senior essay requires that majors begin course work in Romance linguistics and general linguistics by the start of their junior year.

In all curricula, credits may be arranged for study abroad, preferably during the junior year, subject to University regulations governing transfer credit. Summer study abroad is encouraged.

Honors in French or Spanish

Adviser (French)

Robert Ellrich

B201 Padelford Hall

Adviser (Spanish)

George Shipley

C110 Padelford Hall

Members of the College of Arts and Sciences Honors Program who fulfill the requirements of that program during the freshman and sophomore years, in addition to the following departmental honors requirements, receive a bachelor's degree "With College Honors in French" or "With College Honors in Spanish." With the approval of the departmental honors committee, superior students who are not members of the College Honors Program may participate in the departmental honors curriculum and receive a bachelor's degree "With Distinction in French" or "... Spanish."

Candidates for departmental honors must have an overall grade-point average of 3.00 with 3.30 in Romance languages. These averages must be maintained through graduation. Qualified students may be accepted as honors candidates at the time of their first registration for courses numbered above 300.

The requirements for the major with college honors or distinction in French are honors sections of the following courses: French 301, 302, 303, 410, 411, 412, 490. Otherwise, the requirements are the same as for the French major. Credits earned in the Honors Seminar, French 490H, may be used in fulfilling the departmental requirement of four 400-level approved courses.

The requirements for the major with college honors or distinction in Spanish are honors sections of the following courses: 301, 302, 303, 304, 305, 306 (when honors sections are offered). Otherwise, the requirements are the same as for the Spanish major.

First- and second-year honors sections of certain courses are open to members of the College Honors Program and, with permission, to other qualified students. These courses are: French or Spanish 103, 201, 202, French 222, and Spanish 203.

Graduate Programs

Graduate Program Adviser

Antonio Pace

C246 Padelford Hall

General Advisory Office

C260 Padelford Hall

The Department of Romance Languages and Literature offers several programs of graduate study leading to the degrees of Master of Arts and Doctor of Philosophy.

Admission to a graduate program requires that the student satisfy admission requirements of the Graduate School and show completion of an undergraduate major, or its equivalent, appropriate to the proposed advanced degree program. In addition, he must supply his score in the Graduate Record Examination, i.e., the Advanced French or Spanish Test if he seeks a degree in those languages, or the Aptitude Test if his specialty will be Italian or Portuguese.

Students are responsible for knowing and fulfilling the general requirements of the Graduate School.

Master of Arts

The Master of Arts degree program is offered in the following areas of specialization: (1) French language and literature, (2) Italian language and literature, (3) Spanish language and literature, (4) Romance linguistics.

Each program requires the completion of 36 applicable course credits followed by a comprehensive examination based on reading lists provided by the Department for this purpose.

In exceptional cases, a student with a genuine research project and sufficient training will be permitted to take the Master of Arts degree with a thesis, upon prior approval by the Graduate Studies Committee.

Doctor of Philosophy

The doctoral program is offered with the following fields of specialization: (1) Romance literature, (2) Romance linguistics, (3) French language and literature, (4) Spanish language and literature.



The Master of Arts degree is a prerequisite for admission to a doctoral program, unless an exception is granted by the Graduate Studies Committee.

General requirements for all doctoral programs are:

(1) A prospective candidate must be accepted by the Graduate School and the Graduate Studies Committee of the Department. (2) The student must have proficiency in the major language as certified by the Graduate Program Adviser. (3) The student must pass a reading knowledge examination in two languages other than the major. (4) Each program requires completion of 90 applicable course credits earned in graduate status, of which 50 must be earned in courses numbered 500 and above, exclusive of 599. (5) After the completion of 90 course credits as specified above, the student must pass the General Examination. (6) A dissertation approved in subject and content by the student's adviser and Dissertation Reading Committee must be submitted in completed form to the chairman of his Supervisory Committee six weeks before the date of the Final Examination. (7) The student must pass the Final Examination.

Special requirements for the various fields of specialization are as follows:

Romance Literature: This doctoral program allows a flexible combination of two or more Romance literatures. At least 30 of the 60 credits required within the Department must be in the student's major area—French, Spanish, or Italian. The distribution of the remaining formal study and the examination areas are determined by the student and his Supervisory Committee, subject to the approval of the Graduate Studies Committee.

Romance Linguistics: Approximately half of the student's course work will be in Romance linguistics and the history and structure of individual Romance languages. The other half will include courses in general linguistics, psycholinguistics, sociolinguistics, or a Romance literature. The student should have a knowledge of literary works such as is expected of M.A. candidates in the literature of the Romance language in which he specializes.

French or Spanish Language and Literature: Students specializing in a single Romance literature will devote two-thirds of their course work to the field of specialization. They may devote the remainder of their work to studies, within or outside the Department, in an historical period, a literary genre, or any humanistic field relevant to the research specialization as represented by the choice of a doctoral dissertation subject.

SCANDINAVIAN LANGUAGES AND LITERATURE

Chairman

Walter Johnson
C8E Padelford Hall

Professors

Sverre Arestad, Karl-Ivar Hildeman, Walter Johnson, Niels Kofoed

Associate Professor

Per-Anders Holkers

Assistant Professors

Raymond Jarvi, Henning Sehmsdorf

The curriculum in Scandinavian Languages and Literature is designed to give students control of various skills (reading, speaking, writing) in Danish, Norwegian, and Swedish so that they can proceed to a study of the respective literatures and cultures on an advanced level. Open to all students are a variety of courses given in English such as an introduction to Scandinavia and the advanced study of the drama and the novel.

The Department of Scandinavian Languages and Literature offers courses leading to the degrees of Bachelor of Arts, Master of Arts, and Doctor of Philosophy. For undergraduate students, it offers an elective curriculum with a major in Danish, Norwegian, or Swedish, as well as courses in modern Icelandic, literature courses in English, and courses in Scandinavian history.

Undergraduate Programs

Advisers

Henning Sehmsdorf (Norwegian)
C8J Padelford Hall

Walter Johnson (Swedish and Danish)
C8E Padelford Hall

Bachelor of Arts

For the Bachelor of Arts degree, at least 50 credits in the major language are required, of which 25 must be in upper-division courses.

Danish Major

Required courses are: Danish 101-102, 103, 220, 221, 222, 223, 224, 225, 300, 301, 302, 450, and 490. Other courses may be substituted with the approval of the adviser.

Norwegian Major

Required courses are: Norwegian 101-102, 103, 220, 221, 222, 300, 301, 302, 450, and 490. Other courses may be substituted with the approval of the adviser.

Swedish Major

Required courses are: Swedish 101-102, 103, 220, 221, 222, 300, 301, 302, 450, and 490. Other courses may be substituted with the approval of the adviser.

Honors in Scandinavian Languages and Literature

Adviser (Norwegian)

Henning Sehmsdorf

C8J Padelford Hall

Adviser (Danish and Swedish)

Walter Johnson

C8E Padelford Hall

The Scandinavian Department does not offer a formal honors curriculum. On the basis of long tradition, however, provisions exist for the exceptional student to do work of an intensive nature in the Department. Arrangements can be made to permit the qualified student who has, as a member of the College of Arts and Sciences Honors Program, fulfilled the requirements of that program during the freshman and sophomore years to graduate "With College Honors in Danish" or "With College Honors in Norwegian" or "With College Honors in Swedish." With the approval of the departmental honors adviser, superior students who are not members of the College Honors Program may participate in the directed intensive work and receive a bachelor's degree "With Distinction in Danish" or "With Distinction in Norwegian" or "With Distinction in Swedish."

Graduate Programs

Graduate Program Adviser

Walter Johnson

C8E Padelford Hall

Students who intend to work toward advanced degrees must meet the requirements of the Graduate School. (See the *Graduate Study* section of this catalog.)

Master of Arts

Requirements are a minimum of 36 credits in courses or seminars in Scandinavian and related subjects approved by the Department; a reading knowledge of a non-Scandinavian foreign language; and an oral examination. At least 20 of the credits must be in courses numbered 500 and above. Either a thesis or nonthesis program may be selected.

Doctor of Philosophy

Requirements are a minimum of 72 credits in courses or seminars in Scandinavian and related subjects approved by the Department; a reading knowledge of two non-Scandinavian foreign languages; General Examinations for admission to candidacy; an acceptable dissertation; and a Final Examination on the dissertation.

SLAVIC LANGUAGES AND LITERATURE

Chairman

Jack V. Haney

111 Thomson Hall

Professor

Lew R. Micklesen

Associate Professors

Karl D. Kramer, E. Harold Swayze

Assistant Professors

James E. Augerot, Herbert S. Coats, Paul V. Gribanovsky, Roger M. Hagglund, Jack V. Haney, Willis Konick, Emil Kovtun, Barry P. Scherr

Lecturers

Nora Holdsworth, Elias T. Novikow, Vadim O. Pahn

The Department of Slavic Languages and Literature teaches the languages and literatures of Russia and some of the East European countries. Courses making up the Department curricula lead to the degrees of Bachelor of Arts, Master of Arts, and Doctor of Philosophy. The Department offers instruction in the chief languages from among the Slavic language family of Indo-European languages, including Bulgarian, Czech, Polish, Russian, and Serbo-Croatian, as well as in other non-Slavic East European languages, including Hungarian and Romanian. A full range of courses dealing with Russian literature and introductory courses in Czech, Polish, and Serbo-Croatian literatures is offered. Courses in Slavic linguistics, particularly Russian linguistics, are offered at both undergraduate and graduate levels. The Department of Slavic Languages and Literature works closely with the Institute for Comparative and Foreign Area Studies where supporting courses in other aspects of Slavic studies are offered, either by the Institute or by its cooperating departments.

Undergraduate Programs

Adviser

Herbert S. Coats

111 Thomson Hall

GRADUATION REQUIREMENTS

Bachelor of Arts

The requirements for the Bachelor of Arts degree with Russian option are: Russian 201, 202, 203, or the equivalent; 301, 302, 303, or the equivalent; 401, 402, 403, or the equivalent; Russia and East Europe 243; Russian 320; 15 credits from the list of approved electives; and 10 credits of Russian history chosen from Modern European History HSTEU 442, 443, 444, 445.



The list of approved electives includes Russian 451, 452, 453, (prerequisite, 403 or permission); 461, 462, 463, (prerequisite, 403 or permission); 420, 421, 422, 426, 427, 428; Slavic 351. Russian 499 may not be counted an elective for the major.

The requirements for the Bachelor of Arts degree with an option in East European languages are: Russian 201, 202, 203, or 250, or the equivalent; Russian 301, 302, 303, or 350, or the equivalent; two years of a second Slavic or East European language offered by this Department; Russian 320; one course dealing with the literature of the second language; Slavic 351; one course in the geography of the land where the principal language is spoken; one course in the history of each people; a senior research project approved by the Department.

Students in the College of Arts and Sciences may plan their program to include courses necessary to obtain the Provisional Certificate of the state of Washington for elementary and secondary teachers. For students in the College of Education, the Department offers major and minor academic fields in Russian language and literature for those preparing to teach in secondary schools, and a major academic field in Russian language and literature for students preparing to teach in elementary schools. (See the *College of Education* section.)

Honors in Slavic Languages and Literature

Undergraduate majors in Slavic Languages and Literature, who are also in the College of Arts and Sciences Honors Program and have fulfilled the College honors requirements during their freshman and sophomore years, may receive a bachelor's degree "With College Honors" if they fulfill the departmental honors requirements. Students who enter the Department's honors program in their junior year and fulfill its requirements may receive a degree "With Distinction." A comprehensive examination in language, literature or linguistics, and history and culture is required during the final quarter. For further information consult the departmental adviser.

Graduate Programs

Graduate Program Adviser
Lew R. Micklesen
111 Thomson Hall

The Department of Slavic Languages and Literature offers programs of study leading to the Master of Arts and Doctor of Philosophy degrees in Russian language and literature and in Slavic linguistics. Students who intend to work for these degrees must meet the requirements of the Graduate School as outlined in the *Graduate*

Study section. Requests for applications for admission should be addressed to the Graduate Program Adviser, Department of Slavic Languages and Literature. In addition to the application for admission submitted to the University Admissions Office, applicants are required to submit three letters of recommendation plus a statement of purpose (plan of study and advanced degree objective) to the Graduate Program Adviser in the department.

Master of Arts

RUSSIAN LITERATURE

Admission requirements specify that students should have the following minimal background: four years of instruction in the Russian language or its equivalent; one survey course in Russian literature in English and one specialized course in Russian literature in English; work in Russian literature in Russian; some knowledge of Russian history. Students admitted to graduate study who have not had such preparation must take work in addition to the courses required for the M.A. program.

Course work: The student must be in residence three full-time quarters in order to fulfill the minimum requirements for the Master of Arts degree. Specific programs of study will be planned by the student and his adviser before registering for the third quarter of graduate work, but most students will be expected to complete the following in preparation for examinations: the pro-seminar series (Russian 588, 589, 590), the Structure of Russian series (451, 452, 453), one Russian literature course in English, one graduate-level Russian course in a major literary figure, one course in general literary criticism or comparative literature, one course in Russian poetry, and either eighteenth-century Russian literature or early Russian literature.

Other degree requirements: Students will write one long paper approximately the length of a master's thesis. This paper (normally to be completed in conjunction with the pro-seminar series) will be considered representative of the student's ability as a literary scholar and will be submitted to his examining committee along with the written M.A. examinations. The student will normally take his M.A. examination during his final quarter of course work. He will be examined by a three-man committee in three fields from at least two of the categories listed below.

Examination categories and fields: (1) Poetry: nineteenth-century poetry or twentieth-century poetry (to be further delimited by student and adviser); (2) Prose: nineteenth-century prose or twentieth-century prose (to be further delimited by student and adviser); (3) Special fields: Early Russian literature; eighteenth-century

Russian literature; Russian drama; Russian literary criticism; stylistics; Russian linguistics, etc. The student will be examined for six hours—two hours for each of his three fields. In addition, he will be asked to write a half-hour essay in Russian on a question selected by his adviser, in order to demonstrate his proficiency in the language. A reading examination in either French or German is required.

SLAVIC LINGUISTICS

Admission requirements: To be admitted to the master's program in Slavic linguistics, the student should have the following background: four years of study in the Russian language or the equivalent, including one year of instruction in the structure of the contemporary Russian language comparable to the sequence 451, 452, 453 (Structure of Russia) offered in this Department. If the student does not have this preparation, he is expected to fulfill these requirements in addition to his regular program for the M.A. degree.

Course work: The specific program will be worked out by the student in consultation with his adviser before registration for the third quarter of graduate work. The program may be altered at any time before the quarter in which the examinations are taken, with the concurrence of the adviser. The three general areas of study that the student is expected to cover in preparation for his examinations are Slavic Linguistics, General Linguistics, and a second Slavic language. The required series of Russian literature courses in Russian, 461, 462, 463, or their equivalent does not constitute an area for the examination.

Examinations and other degree requirements: The student will write a half-hour essay in Russian on a topic chosen by his adviser in order to demonstrate his proficiency. He is also required to pass a reading examination in either French or German. When the student has completed his course work and these examinations, he will take the master's degree examinations. Two hours are normally allotted to each of the three areas of the master's degree examinations.

The student's committee, after evaluating the student's written examination, will determine whether the student will be recommended for the doctoral program. Only in exceptional cases will the student be permitted to bypass the master's degree.

Doctor of Philosophy RUSSIAN LITERATURE

Admission requirements: To be admitted to the doctoral program in Russian literature the student should have a background similar to this department's master's degree program in Russian literature, including comple-

tion of a long critical paper, plus preparation sufficient for passing the M.A. comprehensive examinations. Such preparation normally includes background in the structure of the contemporary Russian language, plus graduate work on one major author in Russian literature, on Russian poetry, and on a pre-nineteenth-century period. The student should also have some background in Russian social and political history, in another foreign literature or in general literary theory and criticism, and he should be secure in discussing major developments and trends in both nineteenth- and twentieth-century Russian literature.

When a student has completed his M.A. program in Russian literature, or the equivalent for that degree, and wishes to begin his Ph.D. program, he must file a petition with the department chairman requesting permission to undertake the doctoral program. The petition must be approved by members of his Supervisory Committee, the Graduate Program Adviser, and the Chairman of the Department. If the student has not earned his master's degree at the University of Washington, he must present an example of his critical writings as a part of his admission procedure.

Course work: The Graduate School requires that a student have a minimum of two years of residence work beyond the master's degree to receive his Ph.D. degree. The actual program of study is planned by the student and his adviser. The student may alter his program, with his adviser's concurrence, any time before the quarter in which the examinations are given. Courses will be recommended that will lead the student eventually to the successful completion of his Ph.D. General Examinations and that will, at the same time, take into consideration the student's own particular interests.

Examinations and other degree requirements: Previous to writing and submitting his dissertation for defense, the student must (a) pass a foreign language examination, if he did not already pass one in the master's degree program (normally in either French or German); (b) write a one-hour essay in Russian on a topic chosen by his adviser; (c) pass a series of general examinations. The latter will consist of four written examinations, including one specified minor field, in areas selected by the student and his adviser, plus a two-hour comprehensive oral examination that follows the written examinations. One examination may be waived upon either the successful presentation of a formal lecture or series of lectures or acceptance of a paper by a reputable journal in the field. The oral examination will be based on the written examinations, the student's course work, and material appearing on basic reading lists.



The student must also pass an examination in a second Slavic language, unless he has already satisfactorily completed 15 credits in the language, or its equivalent, through course work.

SLAVIC LINGUISTICS

Admission requirements: It is most desirable that prospective candidates for the doctoral degree in Slavic linguistics have a master's degree in the same area. If the student has not earned this degree, he will be expected to make up any deficiencies in background before beginning the Ph.D. program. When a student has achieved a satisfactory background in Slavic linguistics and wishes to begin his Ph.D. program, he must file a petition requesting permission to undertake the doctoral program. The petition must be approved by his Supervisory Committee, the Graduate Program Adviser, and the Chairman of the Department.

Course work: The Ph.D. degree in Slavic linguistics requires that students fulfill the university residency requirement of two years beyond the master's degree. The specific program of study will be worked out by the student in consultation with his adviser soon after his admission. The program may be altered at any time before the quarter in which the comprehensive examinations are taken. The student will be examined in four areas: (1) comparative and historical Slavic linguistics, (2) synchronic and theoretical Slavic linguistics, (3) a third Slavic language, (4) a minor area, which may be one of the following: general linguistics theory, Russian literature, specialization in Slavic language other than Russian, anthropology, etc.

Examinations and other degree requirements: After the student completes his course work he will take the General Examinations for the Ph.D. degree. These examinations are normally divided into three fields plus the minor, as indicated above, and consist of a written and an oral portion. At the discretion of the student's committee, one examination may be waived upon the successful presentation of a lecture or series of lectures or the acceptance of a scholarly article by a reputable journal in the field. The written portion covers the specific fields of study. Because the mastery of the discipline of linguistics is very important, it is often the case that the student declares a minor in general linguistics at the Ph.D. level. If a student does so, he may take the master's examination in the Department of Linguistics to account for his minor.

No later than two weeks following the written examination, the oral portion will take place. This examination is comprehensive in nature and is intended both to provide the student an opportunity to defend his perform-

ance on the written portion and to probe the breadth of the student's knowledge in the entire field of Slavic linguistics.

Prior to taking his examinations, the student must also have satisfied the required reading examination in two non-Slavic languages, one of which is normally completed at the master's level. Upon completion of all of the above requirements, the student will submit a prospectus for his dissertation, which must be approved by a departmental committee established for the purpose. After completion of the dissertation, the candidate will defend it at an oral Final Examination.

SOCIOLOGY

Chairman

Otto N. Larsen

202A Guthrie Hall

Professors

E. A. T. Barth, Hubert Blalock, Herbert L. Costner, Stuart C. Dodd (emeritus), Richard Emerson, Robert E. L. Faris, Edward Gross, Norman S. Hayner (emeritus), Otto N. Larsen, Robert K. Leik, S. Frank Miyamoto, Guenther Roth, Calvin F. Schmid, Clarence C. Schrag, Pierre van den Berghe

Associate Professors

Ronald Akers, Robert Burgess, Joseph Cohen, David R. Schmitt, Rodney Stark, L. W. Wager

Assistant Professors

Phillip W. Blumstein, Frederick Campbell, Lowell Hargens, Michael Hechter, William Kornblum, James McCann

Sociology is the study of forms, processes, and consequences of interaction among persons, groups, and organizations. Sociologists develop and test cause-and-effect generalizations about processes and structures of group life. Among the important subfields in sociology are the distribution, composition, and change of population; human ecology; the nature and development of custom; group formation; communication and mass behavior; the form and function of complex organizations; institutional aspects of society; and processes of change and disorganization. Instruction in subject matter is accompanied by an emphasis on understanding research methods and theory construction essential for extending the boundaries of knowledge. Students of sociology acquire a foundation for work in human affairs in many applied fields.

The Department of Sociology offers courses leading to the degrees of Bachelor of Arts, Master of Arts, and Doctor of Philosophy. In addition, it offers major and

minor academic fields for students in the College of Education. (See the *College of Education* section.) Students using sociology as a major academic field in the College of Education must meet the same requirements as a sociology major.

Special Facilities

The Washington Institute for Sociological Research and the Center for Studies in Demography and Ecology are both part of the Department of Sociology. The Research Institute is available to graduate students and faculty. Its projects are primarily in long-term basic research. The Center has been designed to expand the research and student-training programs in the fields of demography and human ecology as well as to carry on basic research. As a part of the training program, laboratory facilities and research fellowships are available to qualified students.

Undergraduate Programs

Advising Office
204A Guthrie Hall

GRADUATION REQUIREMENTS

Bachelor of Arts

In order to be admitted as a sociology major, a student must have at least junior standing in the University and have earned at least 10 graded credits in sociology with a grade-point average of 2.50 in sociology courses already taken.

In this curriculum, at least 50 credits in sociology are required. Courses must include 110 and 223. In addition a 2.50 grade-point average in sociology courses is required for graduation.

Honors in Sociology

Advisory Office
219 Guthrie Hall

Members of the College of Arts and Sciences Honors Program who fulfill the requirements of that program during the freshman and sophomore years in addition to the following departmental honors requirements receive a bachelor's degree "With College Honors in Sociology." With the approval of the departmental honors committee, superior students who are not members of the College Honors Program may participate in the departmental honors curriculum and receive a bachelor's degree "With Distinction in Sociology." Students admitted to the honors program in sociology usually are planning to do graduate work and are enrolled in separate honors sections of Sociology 110, in which enriched instruction and personal attention are provided. Honors sections are also offered for Sociology 223, 240, and 271, when possible. In each of these there is greater

emphasis on research problems and techniques than in regular sections. Nonmajors who are in the College Honors Program are also eligible for these special sections. Honors students majoring in sociology are also expected to enroll in Sociology 423, 496H, 497H, and 498H as a special part of the regular requirement of 50 credits in the major field. Students in this program are expected to maintain a higher grade-point average than other students.

Graduate Programs

Graduate Program Adviser
S. Frank Miyamoto
202 Guthrie Hall

All graduate students must complete undergraduate requirements for a major in sociology. Students whose undergraduate work in sociology is considered inadequate may be required to pass a qualifying examination before being admitted to graduate courses.

Master of Arts

Students are required to complete at least 27 credits of course work, plus thesis. At least 9 of the course credits must be in courses numbered 500 or above. A general examination is required by the Department. A minor in another department or a program of supporting courses must also be taken. A master's thesis must be written, and submitted seven weeks before the degree is to be granted.

Doctor of Philosophy

The degree of Master of Arts should normally precede the Ph.D. This requirement may be waived by formal action of the Department.

A student in the doctoral program must complete a program of courses approved by his Supervisory Committee. Half of the credits, including the dissertation, must be in courses numbered 500 or above. The residence requirement is three years, two of them at the University of Washington. One of the two years must be spent in continuous full-time residence. A written General Examination will cover four of seventeen possible divisions of specialization, one of which must be General Methodology. A minor sequence or a program of related courses, in addition to these fields, is also required.

A dissertation topic, with a written prospectus sponsored by a member of the faculty, must be submitted to the Supervisory Committee for approval before beginning work on the dissertation. The completed dissertation is to be submitted to the chairman of the Supervisory Committee seven weeks prior to the conferring of the degree. An oral Final Examination is given on the dissertation and the field in which it lies.



Students should also read carefully the general requirements for advanced degrees presented in the *Graduate Study* section.

SPEECH

Chairman

Thomas R. Nilsen
113 Parrington Hall

Professors

Barnet Baskerville, James A. Carrell, Laura I. Crowell, Fred D. Minifie, Horace G. Rahskopf (emeritus), William R. Tiffany, Phillip A. Yantis

Associate Professors

Delmond N. Bennett, Winfred W. Bird, Haig A. Bosmajian, Albert L. Franzke (emeritus), Mark S. Klyn, LuVern H. Kunze, Prentice A. Meador, Jr., Adah L. Miner, Oliver W. Nelson (emeritus), Thomas R. Nilsen, John M. Palmer, Robert M. Post, Elizabeth M. Prather, David Prins, Bruce A. Weber

Assistant Professors

James H. Abbs, Robert B. Arundale, John A. Campbell, Robert L. Carpenter, Gary A. D'Angelo, Donald G. Douglas, Judith C. Espinola, Jerry D. Feezel, Dona L. Hedrick, Joseph W. Helmick, Stephen J. Stephenson, John R. Stewart, Gary Thompson, Marie D. Thompson, Wendel K. Walton, Myron D. Weybright, Wesley R. Wilson

Instructor

J. Lynn deSpain

Lecturers

Michael Hogan, Joanne Nyquist

Research Associates

Mary H. Abbs, Marie A. Tobin

As an academic discipline, speech study aims to provide an understanding of the nature of speech as a form of behavior and a social process, to improve its use for individual, social, and professional purposes, and to aid the general intellectual and social competence of the individual.

Professionally, the study of speech at the University is concerned with preparing students for teaching positions in public schools and colleges, for specialized teaching and research positions in universities, for research careers in the speech and hearing sciences, and for professional work in speech pathology and in audiology.

It is also concerned with contributing to the preparation of students for careers which require a broad liberal education, and which involve extensive oral communi-

cation in interpersonal and audience situations, such as law, business, or the ministry.

The courses of the Department are organized into the following areas: rhetoric and public address, the oral interpretation of literature, speech education, speech-communication science, the speech and hearing sciences, speech and language pathology, and audiology.

The Department of Speech offers courses of study leading to the degrees of Bachelor of Arts, Master of Arts, Master of Speech Pathology and Audiology, and Doctor of Philosophy. In addition, it offers for students in the College of Education both major and minor academic fields in Speech Education at the secondary level; and major academic fields in Speech Education and in communication disorders at the elementary level. (See the *College of Education* section.)

Related courses of special interest to speech students are offered by the Departments of English, Biology, Linguistics, Philosophy, Psychology, and Sociology, the Schools of Drama and Communications, as well as the College of Education.

Special facilities for students interested in the natural and behavioral communication sciences are provided in the Speech Science Laboratories, in the University Speech and Hearing Clinic, and in the Child Development and Mental Retardation Center.

Undergraduate Programs

Adviser

Michael Hogan
119 Parrington Hall

James Carrell (Speech Pathology and Audiology)
Speech and Hearing Clinic

GRADUATION REQUIREMENTS

Bachelor of Arts

At least 55 credits in approved courses are required in this curriculum. For students specializing in areas other than speech pathology and audiology, these must include Speech 102, 140 or 220, 270 or 373, 300 or 301 or 302, and 400. Of the remaining credits, 18 must be in 400-level courses. During the junior and senior years, the student may specialize in one of the areas of speech study. Additional courses may be required in speech or closely related areas (e.g., English, drama, history, linguistics, psychology) in response to the student's need or interest. Selection of courses for meeting group requirements will be made with the approval of the Department.

Students majoring in speech who wish specialization in speech pathology and audiology are required to com-

plete the following courses: Speech 103 or 220, 250, 301, 302, 303, 304, 306, 330, 331, 332, 350, 371, 390, 432, 454, and 5 credits in 351 and 391. Professional preparation for clinical work in the area of communication disorders requires completion of a minimum of 45 credits of approved courses acceptable for a graduate degree.

Students who transfer to a major in speech after entrance to the University must present a cumulative grade-point average of 2.50 in all University courses unless otherwise authorized by the Department, and students majoring in speech are required to maintain a grade-point average of 2.50 in all speech courses.

Graduate Programs

Graduate Program Advisers

Delmond N. Bennett
109 Parrington Hall

Phillip A. Yantis (Speech Pathology and Audiology)
21 Speech and Hearing Clinic

Students who intend to work toward an advanced degree in speech must meet the requirements of the Graduate School as outlined in the *Graduate Study* section and present a background of undergraduate study acceptable to the Department, as outlined in its Graduate Student Guides.

Students wishing admission to the program in speech pathology and audiology at the graduate level should request special information about entrance and degree requirements from the Graduate Program Adviser in that area.

The academic program at the master's level in both speech pathology and audiology has been accredited by the American Boards of Examiners in Speech Pathology and Audiology of the American Speech and Hearing Association.

Master of Arts

Thesis Program: Prospective candidates must complete at least 31 credits in approved courses including Speech 501 or 504 or equivalent. Concentration is permitted in any of the various subject matter areas listed above, with appropriate supporting work in closely related areas, both within and outside the Department. Students must submit an acceptable thesis (9 credits) and pass a comprehensive examination.

Nonthesis Program: Students must complete a minimum of 45 credits in approved courses including Speech 501 or 504 or equivalent and at least one seminar in

the area of specialization. Ordinarily at least 10 credits should be in supporting courses from closely related areas. Although the student in this program is not required to write a thesis, he must show evidence of ability in independent study and research, and must pass a comprehensive examination. This program is designed primarily for students *not* planning to undertake a doctoral program.

Master of Speech Pathology and Audiology

This program leads to a professional degree, which is normally terminal. A minimum of 45 credits in approved courses must be completed. Each student's program is designed so that his combined undergraduate and graduate study will allow him to meet the academic and practicum requirements for certification by the American Speech and Hearing Association in his area of specialization. Satisfactory demonstration of clinical competence is required; a thesis and a foreign language are not required. The student must pass a comprehensive examination.

Doctor of Philosophy

Three major areas of specialization are available: (1) *rhetoric and public address*, including communication theory, oral interpretation, and speech education; (2) *speech science*, including phonetics, speech physiology, and acoustics; and (3) *speech pathology or audiology*, including hearing science. For the Ph.D., no precise number of credits is prescribed. However, the requirement of three years of full-time residence suggests a total of not less than 108 credits, of which approximately one-third should be devoted to the dissertation.

STATISTICS AND PROBABILITY

Courses in the mathematical theories of Statistics and Probability are offered at both the undergraduate and graduate level in the Department of Mathematics. There is an undergraduate program leading to the Bachelor of Science degree, with a Mathematical Statistics option. The graduate program leads to the degrees of Master of Science in Mathematical Statistics and Doctor of Philosophy. Descriptions of these programs and courses are listed under the Department of Mathematics.

A graduate program in biostatistics, leading to the degrees of Master of Science and Doctor of Philosophy, is administered by the Graduate School Biomathematics Group. Information concerning this program will be found in the *Interdisciplinary Graduate Degree Programs* section of this catalog.



ZOOLOGY

Chairman

Donald S. Farner
106 Kincaid Hall

Professors

Ingrith J. Deyrup-Olsen, W. Thomas Edmondson, John S. Edwards, Donald S. Farner, Robert L. Fernald, Aubrey Gorbman, Paul L. Illg, Kjell Johansen, Alan J. Kohn, Eugene N. Kozloff, Arthur W. Martin, Jr., Gordon H. Orians, Richard C. Snyder, Minze Stuver, Arthur H. Whiteley

Associate Professors

Robert D. Cahn, Richard A. Cloney, Charles D. Laird, Kenneth L. Osterud, Dixy Lee Ray, Frank Richardson

Assistant Professors

William D. Ball, Richard H. Conrad, John M. Palka, Dennis R. Paulson, A. O. Dennis Willows

Lecturer

W. Mary Griffiths

The Department of Zoology offers programs leading to the degrees of Bachelor of Arts, Bachelor of Science, Master of Science, and Doctor of Philosophy. Undergraduate students who wish to study for the baccalaureate degree are offered two curricula: an elective curriculum leading to the Bachelor of Arts degree for those who prefer a broad liberal arts education, and a prescribed curriculum, the Bachelor of Science program, for those who are preparing for graduate or professional study. Also available to those intending to pursue graduate study in certain phases of molecular, developmental, or cellular biology, or in genetics, is an interdepartmental curriculum leading to the Bachelor of Science degree in Biology. Additional curricula with different emphases may be expected in the biology degree program. In conjunction with the departments of Botany, Genetics, and Microbiology, the Department of Zoology offers a major academic field in biology for students in the College of Education, as well as an academic minor in biology. See *College of Education* section in this catalog.

Undergraduate Programs

Advisory Offices

106 Kincaid Hall
222 Johnson Hall
428 Kincaid Hall

Students who plan to take a degree in zoology should declare their major no later than the beginning of the junior year. Students who hope to obtain a degree within the usual time period should contact the departmental Advisory Office as early as possible. Applicants must

present an approved selection of courses in the major with a grade-point average of not less than 2.00.

The following courses are given to meet the needs of other students and will not be accepted for major credit: Biology 100, Zoology 114, 118, and 119. Zoology 208 ordinarily will not be accepted for major credit.

GRADUATION REQUIREMENTS

Bachelor of Arts

Requirements for this degree include the general College requirements for the baccalaureate degree. The minimum requirement (50 credits) for the departmental major will include: Biology 210, 211, 212 (15 credits), or for transfer students, a reasonable substitute series, or with special permission, Biology 101-102 (10 credits). Genetics 451 (4 credits) or equivalent is required of all students.

The required courses listed above are meant to introduce the student to the field of biology as a whole. In addition, a program of advanced courses is to be selected by the student in consultation with a departmental adviser. This selection permits a choice from a wide spectrum of courses and also some degree of specialization in fields of particular interest to the student. To guarantee breadth of training in biology, the total program should include experience with the major areas and approaches, including cellular, developmental, morphological, physiological, ecological, and evolutionary biology. Within these limits the range of choice allows the degree to be one in biology rather than zoology if the student so wishes.

Electives to complete the 50 credits required for the major are to be chosen from upper-division courses in zoology, biology, botany, microbiology, genetics, biochemistry, oceanography, and biologically-oriented courses in other departments; routinely acceptable courses in these areas are listed under the Bachelor of Science requirements below. Courses other than those listed, if appropriate to an individual student's program, may be accepted by special permission of the departmental Undergraduate Affairs Committee. A minimum of 15 credits must be chosen from those listed as biology or zoology. In 100- and 200-level courses in biology, botany, and zoology, a maximum of 20 credits will be acceptable toward the major. Additional requirements: Mathematics 105; general and organic chemistry—a 200-level organic sequence is recommended.

Bachelor of Science

The requirements for this degree include the general College requirements for the baccalaureate degree. The

minimum credit requirement (50 credits) for the departmental major will include:

Biology 210, 211, 212	15
or, a basic introductory series of courses at another institution, or, with special permission <i>after</i> the course has been taken,	
BIOLOGY 101-102	10
GENETICS 451	4
BIOLOGY 472	3
ZOOLOGY 301 (3 credits), plus an approved 400-level cell biology or physiology course, the total representing a minimum of 8 credits, including 2 credits of laboratory	8
ZOOLOGY 433, 434, or 453-454	10
ZOOLOGY 456	5

Electives are to be chosen from upper-division courses in zoology, biology, biochemistry, or genetics, or approved biological courses in other departments, to total a minimum of 50 credits in the major field. Approved courses will include: Physical Anthropology 201, 387, 482, 483; Architecture 340; Biological Structure 411 or 412; Biomedical History 419, 420; Fisheries 401; Geological Sciences 430, 436, 437; Microbiology 400, 430; Oceanography 434, 435; Physiology and Biophysics 418; Psychology 421; Wildlife Sciences 401. Other courses appropriate to the individual student's program may be accepted by special permission of the departmental Undergraduate Affairs Committee.

Additional requirements: General chemistry and organic chemistry through Chemistry 232 or 236, including prerequisites; a one-year course in general physics, with laboratory optional; Mathematics 124, 125, and either 126 or Quantitative Science 281. Quantitative Science 291, 292 (6 credits) may be substituted for Mathematics 124, 125 (10 credits). Organic chemistry should be completed by the end of the second year, and physics by the end of the third. In 100- and 200-level courses in biology, botany, and zoology, a maximum of 20 credits will be acceptable for the major.

Language: Completion of two years in college of one suitable foreign language is required for the Bachelor of Science degree. Students planning graduate work in a biological field should take note that proficiency in a foreign language is required for an advanced degree and in some programs two languages must be offered. The languages most frequently used in advanced biological fields are French, German, Japanese, and Russian. The student should consult early with an adviser for information on the language useful for his particular area of interest.

If the intended graduate program is to be directed toward molecular or cellular biology or some phases of developmental biology and physiology, basic course work in biochemistry and/or physical chemistry may be advisable. Some phases of population biology, ecology, and other disciplines require further training in statistics, as offered in Quantitative Science 382, 383.

In any event, a student planning to do graduate work should seek the advice of faculty members who are best acquainted with his areas of interest.

Honors in Zoology

Adviser

Alan J. Kohn

448 Kincaid Hall

Members of the College of Arts and Sciences Honors Program who fulfill the requirements of that program during the freshman and sophomore years and who also complete the departmental honors requirements receive a bachelor's degree "With College Honors in Zoology."

With the approval of the departmental honors committee, superior students who are not members of the College Honors Program may participate in the departmental honors curriculum and receive a bachelor's degree "With Distinction in Zoology." Students whose records merit such recognition will be selected during their junior year and will complete their programs by fulfilling the requirements described in the next paragraph. It is recommended that students who desire admission to the "Distinction" program take some honors credits during their junior year and present their records in these courses as part of their application for admission to the "Distinction" program.

Candidates for a Bachelor of Arts or Bachelor of Science degree with "Honors" or with "Distinction" will fulfill the departmental requirements by completing a minimum of 20 credits in upper-division zoology honors courses and honors courses in related biological science subjects. Honors credit for courses taken outside the Department of Zoology which are to be counted toward this requirement must be approved by the Honors Committee. Most courses in the Department of Zoology may be taken for honors credit, which will mean an opportunity for in-depth analysis by means of the preparation and presentation of special papers by the honors students at one or more informal seminars in addition to the regular course meetings. The format of the honors sections of a course will vary, but may include an honors laboratory section. It is recommended that students interested in the "Distinction" program register in honors sections in Biology 210, 211, 212.

Included in the 20 credits of upper-division (300- and 400-level) courses, graduation with "Honors" or with "Distinction" requires that the student have at least 3 credits in the honors section of Zoology 490, the departmental honors seminar. Its subject matter varies



from quarter to quarter, and in so doing provides an opportunity for in-depth coverage of a selected area of biology which will allow integration of the various levels of biological organization. The honors section of Zoology 490 is recommended for seniors, but may be taken under special arrangements with the professor in the junior year. It is strongly recommended that each honors or distinction student take 3 credits of Zoology 498 with a professor or professors of his choice to further acquaint him with the type of library and laboratory research involved in a career in the biological sciences. The honors section of Zoology 491, a seminar on research problems under investigation by department faculty members, is also recommended.

An overall grade-point average of 3.00 or higher must be maintained by all candidates for an honors degree or a degree with distinction.

Graduate Programs

Graduate Program Adviser

William D. Ball

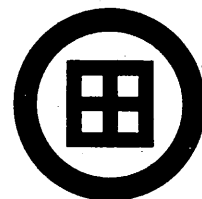
332D Kincaid Hall

The Department of Zoology offers courses of study leading to the degrees of Master of Science and Doctor

of Philosophy. Students seeking an advanced degree must meet the admission requirements of the Graduate School and, in addition, be accepted by the Department. A choice of supervisor need not be made immediately, but should not ordinarily be delayed into the second year of graduate work. A program of course work for each student will be developed under the direction of the Graduate Program Adviser, or his supervisor and a faculty committee.

Students are required to complete satisfactorily, at the beginning of the second year of residence, a written departmental examination covering four basic fields from the following list: physiology, cell biology and gene action, ecology and evolution, development, vertebrate biology, and invertebrate biology.

A departmental brochure, available on request, furnishes a detailed account of the requirements and procedures involved in the programs for advanced degrees.



BUSINESS ADMINISTRATION

Dean

Kermit O. Hanson
115 Mackenzie Hall

Associate Deans

Virgil E. Harder, Richard A. Johnson

DEPARTMENT OF ACCOUNTING

Chairman

Gerhard G. Mueller

Professors

Kenneth B. Berg, Don T. De Coster, David H. Li,
Arthur N. Lorig (emeritus), Fred J. Mueller, Gerhard
G. Mueller, W. Thomas Porter, Julius A. Roller,
Lauren M. Walker

Associate Professors

Loyd C. Heath, Daniel L. McDonald, George I.
Prater, Kavasseri Ramanathan, Eldon L. Schafer

Assistant Professors

William L. Felix, Jr., Alvin Martin, Robert G. May,
John G. Rhode, Gary L. Sundem

Lecturers

Fletcher O. Johnson (emeritus)

DEPARTMENT OF FINANCE, BUSINESS ECONOMICS, AND QUANTITATIVE METHODS

Chairman

Alfred N. Page

Professors

Stephen H. Archer, Philip J. Bourque, John S. Y. Chiu,
Charles A. D'Ambrosio, Kermit O. Hanson (Dean),

Charles N. Henning, Dudley W. Johnson, Robert H.
Scott

Associate Professors

William Alberts, Peter A. Frost, Charles W. Haley,
Alan C. Hess, Robert C. Higgins, Alfred N. Page,
William Pigott, Hirokuni Tamura

Assistant Professors

Donald L. Adolphson, George Diehr, Bruce H. Faa-
land, Nancy L. Jacob, Lawrence D. Schall

DEPARTMENT OF BUSINESS, GOVERNMENT, AND SOCIETY

Chairman

Sumner Marcus

Professors

S. Darden Brown (emeritus), Joseph Demmery (emer-
itus), Leonard D. Goldberg, Jack Lessinger, Sumner
Marcus, R. Joseph Monsen, Dwight E. Robinson, War-
ren R. Seyfried, Bayard O. Wheeler

Associate Professors

David K. Hart, Lewis L. Langness, Dennis F. Strong,
James A. Wickman

Assistant Professors

Peter Teachout

Lecturer

Ronald B. Jamieson

DEPARTMENT OF MARKETING, TRANSPORTATION, AND INTERNATIONAL BUSINESS

Chairman

Guy G. Gordon

**Professors**

Henry A. Burd (emeritus), Lowell J. Chawner (emeritus), Nathanael H. Engle (emeritus), Warren W. Etchelson, Guy G. Gordon, Virgil E. Harder, Endel J. Kolde, Wallace I. Little, Charles J. Miller (emeritus), Herta A. Murphy, John C. Narver, Charles E. Peck, Louis C. Wagner, John J. Wheatley

Associate Professors

Frederick L. Denman, Harrison L. Grathwohl, Robert W. Little, Sadaomi Oshikawa, Thaddeus H. Spratlen

Assistant Professors

Robert P. Brody, Douglas L. MacLachlan, Reza Moinpour, Richard W. Moxon, Homer E. Spence, Frederick J. Truitt

DEPARTMENT OF MANAGEMENT AND ORGANIZATION**Chairman**

Jim Rosenzweig

Professors

Edward G. Brown, Wendell L. French, Dale A. Henning, Richard A. Johnson, Fremont E. Kast, Henry P. Knowles, Harry R. Knudson, Jr., Preston P. LeBreton, Robert C. Meier, William T. Newell, Jim Rosenzweig, Borje O. Saxberg, Albert N. Schreiber, William G. Scott, Charles E. Summer, Robert A. Sutermeister

Associate Professors

Vernon E. Buck, Margaret P. Fenn, Richard B. Peterson, Karl H. Vesper, Robert T. Woodworth

Assistant Professors

Cecil H. Bell, Jr., Ronald T. Ebert, Philip K. Kienast, Terence R. Mitchell, DeWayne J. Piehl

Men and women who embark upon careers in business undertake a challenging assignment. They involve themselves in an area of human activity that is vital to continued economic progress and that is at the center of many of the social, political, and economic forces abroad in the world today. The rate at which the business world is changing in response to internal and external forces makes it impossible to prepare students adequately for the rest of their productive lives in business. The Business Administration curriculum, therefore, seeks to give students a good foundation upon which the learning experience can be continued.

The School of Business Administration offers an undergraduate program leading to the degree of Bachelor of Arts in Business Administration. The Graduate School of Business Administration offers programs leading to the following degrees: Master of Business Administration, Master of Arts, and Doctor of Philosophy. The Graduate School of Business Administration also offers continuing education programs for executives, and co-operates with other colleges and departments in a pro-

gram leading to the degree of Master of Urban Planning.

The baccalaureate program concentrates upon instilling values, sharpening problem-solving abilities, and increasing competence of thought about one of man's most important activities—business—and about the society within which it operates. Upon graduation, most students pursue careers in business, usually at the administrative and managerial levels; in addition, a considerable number continue their studies in graduate schools in such fields as business administration or law.

The M.B.A. program provides an understanding of the tools, techniques, and applications of management systems and preparation for professional manager careers. The Ph.D. program is oriented toward theory and research in order to serve students planning careers as university professors or research staff specialists.

Business Administration became an independent unit within the University of Washington system in 1917. Since 1921, it has been a member of the American Association of Collegiate Schools of Business, with both its undergraduate and graduate programs certified. Senior faculty number about one hundred ten members. Approximately fourteen hundred students (juniors and seniors) are enrolled in the undergraduate (B.A.) degree program; more than five hundred students are enrolled in the graduate (M.B.A., M.A., and Ph.D.) programs. Faculty, library, and other resources are organized to serve the varied objectives of the School and Graduate School of Business Administration.

Facilities and Services

Two buildings, Balmer Hall and Mackenzie Hall, serve as centers for most Business Administration activities.

Balmer Hall, named after Thomas Balmer, former President of the University of Washington Board of Regents, contains classrooms and the Business Administration Library.

Mackenzie Hall, named in memory of Professor Donald Mackenzie, chairman of the Department of Accounting, Finance, and Business Statistics from 1949 to 1955, is the School's administrative and faculty center. It contains the Dean's Office, the Office of Graduate Programs, the Office of Undergraduate Programs, and the Office of Faculty Publications and Research, as well as faculty conference rooms and individual faculty offices.

The *Business Administration Library*, which occupies the first floor of Balmer Hall, has an outstanding collection of general and specialized materials on all phases of business, including books, magazines, periodicals,

pamphlets, government publications, annual reports, indexes, bibliographies, and loose-leaf services. These sources, and the Library's reserve and reference service, supply the basic class and seminar needs of the students. Supplementary and additional primary research material are available in the University's main library and other specialized branch libraries located on the campus.

The *Journal of Contemporary Business* is published quarterly by the Graduate School of Business Administration. Each issue analyzes a particular problem or area of interest relevant to business. The magazine is distributed on a paid subscription basis to the public and on an exchange basis to bureaus of business research and libraries of other universities. Current subscription rates are \$6.00 for one year, \$15.00 for three years. Single issues are \$2.50.

The *Journal of Financial and Quantitative Analysis* is a specialized journal published jointly with the Western Finance Association. It is issued in January, March, June, September, and December. Subscriptions are \$10.00 a year for individuals and \$15.00 per year for firms and libraries. Single copies are \$2.50; special issues, \$3.00.

The Graduate School of Business Administration also publishes monographs of general interest to the business community or of a scholarly nature. Currently, five series of monographs are being published: (1) the Business Studies Series, for studies of general interest; (2) the Management Series, for studies related to business management theories, practices, and procedures; (3) the International Business Series, for studies of business practices and analysis of business administration in various countries; (4) the Technical Reports Series for special technical studies, usually quantitative or related to computer applications; and (5) Occasional Papers, for shorter or special studies, sometimes in preliminary form. In addition to the regular series of publications, special studies (often financed by research grants) are published when they appear to be of general interest and to make a scholarly contribution to the study of business.

Student Activities

Organizations include undergraduate and graduate associations, honorary societies, and professional clubs. Lounges and conference rooms in Balmer Hall provide centers for business students to meet informally and to participate in scheduled events.

Undergraduate Organizations

The *Accounting Club* promotes and encourages professional and social contact among students, instructors, and practicing accountants. Career objectives and top-

ics of current interest in accounting are discussed at semimonthly meetings. Membership is open to students interested in accounting.

Rho Chapter of *Alpha Kappa Psi*, a national commerce fraternity, is open to male Business Administration students who are at least third-quarter freshmen and have grade-point averages of 2.50 or better. Members have the opportunity to associate both socially and professionally with present and future businessmen and faculty.

Beta Alpha Psi is a national accounting fraternity dedicated to furthering the professional aspects of its membership. Delta Chapter is composed of accounting majors with at least junior standing, a minimum of 12 credits in accounting, a cumulative grade-point average of at least 3.00 in accounting and at least 2.50 in all subjects.

Beta Gamma Sigma, national honorary fraternity for both undergraduate and graduate students, recognizes students with distinguished academic records in the field of business administration. Juniors, who have attended the University at least three quarters and are in the top 5 per cent of the cumulative grade-point average, and seniors in the top 10 per cent, are invited to become members.

The *Business Student Association* has as its purpose the organization and representation of undergraduate business students in academic, social, and community activities. All regularly enrolled undergraduates in the School of Business Administration and prebusiness majors who have completed at least 6 credits in business administration are eligible for membership.

The *Finance Club* is organized to promote interest and knowledge in the several fields of finance, including banking, business finance, investments, and international finance. Membership is open to all interested students who are regularly enrolled.

The *Graduate Association of Black Business Students* promotes the interests of black students in the School and focuses on economic development in the black community. Undergraduates may also join the organization.

The *International Association of Students in Economics and Commerce* (AIESEC) is an organization open to all undergraduate and graduate students interested in foreign exchange traineeships. Internationally, AIESEC is operating in over fifty member nations.

The *Marketing Club*, affiliated with the American Marketing Association, is open to all students interested in marketing.



Pan Xenia, a professional international foreign trade fraternity, is open to men with a satisfactory grade-point average, majoring in international business, political science, economics, or any international field.

The *Student Advisory Council* serves a liaison function between undergraduate Business Administration students and the School. Most meetings are devoted to discussions of student concerns, School needs and problems, and recommendations for change. Members include the president and one elected representative from each Business Administration organization, the chairman of the Undergraduate Program Committee, the Associate Dean for Undergraduate Programs, and the Dean of the School.

Graduate Organizations

Beta Gamma Sigma, national honorary fraternity for both graduate and undergraduate students, recognizes students with distinguished academic records in the field of business administration.

The *Ph.D. Association* provides a forum for regular contact between doctoral students and members of the faculty and administration. Various social functions are held for members throughout the year.

The *Graduate Association of Black Business Students* promotes the interests of black students in the School and focuses on economic development in the black community. All graduate students are eligible for consideration by the membership committee.

The *International Association of Students in Economics and Commerce (AIESEC)* is an organization open to all students interested in foreign exchange traineeships.

The *M.B.A. Association* and its council form the focal point for the social and professional activities of the master's degree students. Faculty as well as members of the business community are involved in its activities.

Career Planning and Placement

The Business and Government Placement Office, the nontechnical division of the University's Career Planning and Placement Office, is located in 301 Loew Hall. It provides information and assistance to graduating students and alumni of the School and Graduate School of Business Administration seeking full-time career employment. In addition to scheduling campus interviews each year, the office performs employment office service on an individual basis.

Continuing Education

To serve the continuing education needs of businessmen and women, the School and Graduate School of

Business Administration conducts a number of programs aimed at different audiences. These programs may be either University initiated or cosponsored with one or several outside organizations.

Executive Development Programs

The University generally conducts two executive development programs designed primarily for managers in larger organizations. The *Executive Development Program*, for upper-management personnel, focuses on self-renewal in a society that is experiencing an accelerating pace of change. The *Management Program* is designed for middle- to upper-management and is a nonresident program held Monday evenings during the academic year.

Small Business Series

To assist owners and managers of small businesses in planning, organizing, and operating their businesses successfully, a series of short courses are offered at various times during the academic year. The series includes Practical Management for Small Business, Financial Planning and Control, Human Relations and Personnel Management in a Small Business, Decision Making for Small Businesses, and Marketing Management for Small Firms.

The School and Graduate School of Business Administration also sponsor or cosponsor a number of programs devoted to specific problems or functional areas. Sponsored programs include the Annual Business Outlook Conference, the Tax Clinic for Small Business, and the Entrepreneurship Symposium. Regularly cosponsored programs include the Pacific Coast Banking School and the Savings and Loan School for Executive Development.

For information on the courses that are being offered at the present time, contact the Executive Development Program Office (telephone 543-4769), or the Office of Short Courses (543-5280). Ask to be put on the mailing list to receive brochures for specific programs.

UNDERGRADUATE PROGRAMS

Associate Dean

Virgil E. Harder
139-140 Mackenzie Hall

Undergraduate Office

137 Mackenzie Hall

The School of Business Administration, with admission at the junior level, offers a two-year program leading to the degree of Bachelor of Arts in Business Administration. The curriculum, building upon a basic foundation in the arts and sciences, provides exposure to a wide

range of functional business areas and the opportunity to study selected areas in some depth.

Students planning to study Business Administration at the University should emphasize college preparatory courses while in high school. A good foundation in mathematics is strongly recommended, since proficiency at the introductory calculus level is necessary for certain Business Administration courses.

Admission

Admission requirements include completion of the following courses or their equivalents:

	CREDITS
Mathematics 105, 157	9
Economics 200, 201	10
Behavioral Sciences (psychology, sociology, and anthropology)	10
A balanced program composed of additional credits in the humanities, social sciences, and the natural sciences	41
Accounting 210, 220, 230	9
Business, Government, and Society 200	5
Quantitative Methods 200, 201	6
Total	90

Admission requirements also include attainment of at least a 2.00 cumulative grade-point average. However, if the number of eligible applicants exceeds the space available, acceptance will be competitive, based on cumulative grade-point average.

Students entering the University of Washington as freshmen spend their first two years in the College of Arts and Sciences. Students transferring from community colleges or other schools are enrolled either in the College of Arts and Sciences or directly in the School of Business Administration, depending upon the number and types of credits completed at the time of transfer.

Academic Counseling

After notification of admission, and before registration, students should visit or write to the School for assistance in planning their course programs. Pre-business students (enrolled in the College of Arts and Sciences) normally discuss their programs with pre-business advisers located in B10 Padelford Hall. Junior and senior students enrolled in the School of Business Administration are served by full-time Curriculum Advisers located in 137 Mackenzie Hall. These advisers are also available to serve students in other areas of the University who desire more information regarding courses and programs in the School of Business Administration.

The Curriculum Advisers' primary role is to help students achieve their academic goals via assistance in preparing programs of studies, registering for classes, and finding solutions to academic questions or problems which may arise. Selection of areas(s) of concentration (if any), choice of courses, and fulfillment of degree requirements are the responsibility of the student.

Scholarships

Most Business Administration undergraduate scholarships are awarded on the basis of high scholarship and/or financial need.

Additional information is available at the Office of Financial Aids, 170 Schmitz Hall, Seattle, Washington 98195, telephone (206) 543-6101; and at the University of Washington School of Business Administration, Office of Undergraduate Programs, 137 Mackenzie Hall, Seattle, Washington 98195, telephone (206) 543-4350.

Graduation Requirements

Bachelor of Arts in Business Administration

Eligibility for the degree of Bachelor of Arts in Business Administration requires that students (1) meet the general requirements of the University, including a total of 180 credits with a cumulative in residence grade-point average of 2.00; (2) earn a cumulative grade-point average of at least 2.00 in all business administration courses taken at the University of Washington; (3) complete a total of at least 72 credits in business administration courses and 72 credits in nonbusiness administration courses; satisfy the final year residence requirement; and (4) complete the Business Administration Core.

Business Administration Core	CREDITS
B ECN 300 Managerial Economics	3
B ECN 301 Money, National Income, and Prices	4
MKTG 301 Marketing Concepts	4
O SYS 301 Principles of Operations Analysis	3
A ORG 460 Human Relations in Organizations	4
FIN 350 Business Finance	4
A ORG 440 Advanced Organization Theory	3
B G & S 444 Business and Society	4
B POL 470 Business Policy (4)	
<i>or</i>	
B POL 471 Problems of the Independent Businessman (4)	
<i>or</i>	
B POL 480 Business Simulation (5)	4 or 5
	33-34
Upper-division Business Electives	19-18
Business and/or Non-Business Electives	38
	90

Electives

No more than 9 elective credits in lower-division Business Administration courses (in addition to the 20 credits of lower-division Business Administration credits required for admission) may be counted toward the degree of Bachelor of Arts in Business Administration.



tion. None of these elective credits may be used to satisfy the requirement of 72 credits in Business Administration courses. For courses from other institutions that are equivalent to lower-division Business Administration courses, but which carry more credit, the additional credits will be included in the 9-credit allowance. A maximum of 18 upper-division ROTC credits may be applied toward graduation.

Double Bachelor's Degree

Students in other schools and colleges of the University who wish simultaneously to receive a degree from the School of Business Administration must receive approval from the Dean of the School of Business Administration at least three quarters before completing the requirements for the degree from this School.

Second Bachelor's Degree

A graduate in any field may apply for admission to study for a second bachelor's degree. Application should be made to the University of Washington Office of Admissions.

Final Year Residence Requirement

Students transferring into the School of Business Administration with 135 or more earned credits will be required to accumulate a minimum of 45 additional credits in residence while enrolled in the School of Business Administration. Any exception to the residence requirement must be approved by the Dean.

Business Education

Students preparing to teach business subjects at the secondary level will normally enroll in the College of Education, major in business education, and graduate with the bachelor's degree. (See *College of Education* section.)

Areas of Study

Students may elect courses in one or more of the areas of study described briefly in the following paragraphs.

Accounting

The Accounting curriculum provides a rigorous educational experience centered on developing and communicating financial and operational information for business and nonprofit economic entities. The curriculum provides foundations for careers in accounting (public accounting, industrial or private accounting, governmental and institutional accounting) or for a general business career, as well as for certain other professions, such as law.

The notation "Accounting" will be included on the transcript of Business Administration students who graduate with a Bachelor of Arts in Business Admin-

istration and who complete the following courses in Accounting with a minimum grade-point average of 2.00: Accounting 301, 302, 303, 311, 411, 421, and 6 elective credits in 400-level accounting courses (except 475, 490, and 499). Total credits required: 26.

Business Communications

The written business communications courses stress the writing dimension as it relates to various aspects of business; also included are theory and techniques of effective communication in interpersonal relationships. The behavioral objectives of the courses are to help students convey information in a clear, exact, concise manner, as well as to help students develop a sensitivity to words and their use as a communications tool in business management.

Business Economics

The business economics courses apply the theoretical body of knowledge of economics to the maximization of firm goals. Being applied and operational in orientation, business economics concerns itself with the incorporation of topics that make economics an effective analytical tool in business decision making. Subject matter includes forecasting economic conditions in the economy, predicting economic impacts upon the firm's decisions, and the measurement of demand, pricing, policy, business fluctuations, and monetary policy, as well as the application of economic models to management decisions.

Business, Government, and Society

Business, Government, and Society is an interdisciplinary program that joins history, law, and the behavioral sciences in a study of the institutional and ideological environment of American business. The curriculum is designed to enable students to understand the interaction between business and other elements of society, and thereby to deal effectively with current issues.

Finance

The objective of the Finance curriculum is an understanding of the role of finance in the decision structure of the firm. This includes an understanding of the environment of the financial manager; the money and capital markets of the economy; the problems and decision structure for the allocation of capital within the

firm; and understanding of the view of the suppliers of capital; and a sound grasp of some of the tools useful in financial analysis (accounting and business economics). Students who concentrate on finance may be interested in careers in financial institutions, in financial management (treasurers, controllers, financial administrators, capital project evaluators), and in investment management.

International Business

International business—including trade, payments, and multinational corporate systems and activities—has become a major force in the contemporary world. The curriculum prepares students for international responsibilities in business firms, governmental agencies, and other international organizations. Students interested in international business are encouraged to take foreign language and literature courses.

Management and Organization

Managing complex organizations effectively is an important task and meaningful career. The student seeking a career in management can benefit from exposure to the four interrelated curricula offered in management and organization. By careful selection of courses, a student can fashion his own unique program for a career in management. In addition to the core requirements in business administration, students desiring a concentration in management and organization would normally take courses from the four areas described below.

Operations and Systems Analysis is concerned with management of operating systems in organizations, including the study of managerial decision processes, design of system structure, determination of system effectiveness, and analysis of dynamics of system behavior.

Personnel and Industrial Relations deals with the human resources of organizations, including employee selection, motivation, appraisal, compensation and development; union-management relations; and the design, administration, measurement, and evaluation of human resource systems.

Administrative Theory and Organizational Behavior is concerned with developing concepts, skills, attitudes, and personal experiences that will enable students to be more effective managers. The courses are interdisciplinary and utilize insights from all behavioral and social sciences to understand processes and structure of organizations.

Business Policy supplements and integrates all the work taken in other departments of the school, adding to understanding of the executive viewpoint in management decisions. The emphasis is on problem analysis, decision-making processes, planning and control, and establishment and appraisal of objectives and policies.

Marketing

Sound decisions in the areas of consumer behavior, channels of distribution, determination and measurement of markets, pricing, physical movement of goods, product development and mix, promotions, and sales administration are fundamental to business success. Such decisions should be based on a knowledge of marketing concepts and relationships, planning and control, tools, principles, and policies. The curriculum prepares students to enter industrial marketing organizations, manufacturing and wholesaling institutions, retail stores, advertising, and research and government agencies.

Quantitative Methods

The Quantitative Methods curriculum provides education in the use of mathematical and statistical tools in the analysis of administrative problems and decision making. The purpose of the courses is to familiarize students with analytical methods useful in administrative decisions and to prepare students as staff specialists for government and business organizations or other important roles in organizations requiring such technical familiarity. Among subjects taught are classical statistical inference, regression and correlation, analysis of variance, survey sampling, time series analysis, operations research methods, and computer logic and analysis.

Risk and Insurance

Efficient use of insurance and other risk-bearing techniques is a complex process, whether applied to business affairs or to family financial management. Courses in risk and insurance provide a basic understanding of principles and their applications to small- and large-scale enterprises, and to insurer operations. Risk and insurance courses are a useful addition to concentrations in finance, management, accounting, and other areas of study. Job opportunities in insurance include underwriting, insurance company representation, claims adjusting, and general insurance company management. Students who are interested in insurance careers should prepare broadly by taking a variety of business courses.



Transportation

The transportation industry and the services it performs are indispensable to our dynamic economy. New developments in physical distribution management are revolutionizing long-established business practices. The transportation curriculum is designed for students who wish a working knowledge of the many phases of the transportation industry.

Urban Development

The educational objective of Urban Development is the understanding and utilization of economic, social, and technological forces that affect the physical facilities and social institutions of cities. This area emphasizes systematic and scientific methods in the analysis of allocation, use, and development of urban land resources. Subject matter includes urban land economics, methods and models of locational analysis, investment and financial analysis of residential, commercial, and industrial development, and public policy of urban development, including questions of taxation, housing, land-use controls, and urban renewal.

GRADUATE PROGRAMS

Associate Dean and Graduate Program Adviser
Richard A. Johnson
109 Mackenzie Hall

Admission

Students wishing to work toward advanced degrees in business administration must submit an application for admission to the University of Washington Graduate School. The application is evaluated in the Graduate Admissions Office and it is then forwarded to the Graduate School of Business Administration for review. Admission must be approved by both the Graduate School of Business Administration and the University Graduate School.

Applicants also must submit their scores on the Admission Test for Graduate Study in Business. Inquiries concerning this test should be addressed to the Educational Testing Service, Box 966, Princeton, New Jersey 08540. Arrangements should be made for this examination well in advance of the closing date for submitting applications.

Application Procedure

The Admissions Committee will review applications for Summer and Autumn Quarters in late February or

early March. Decisions will be made at that time (early March) and applicants will receive notice of the decision soon thereafter. Applicants applying after that time and up to April 1 will be given full consideration for the remaining spaces.

Applicants who have been accepted will be required, after notification of acceptance, to send a recent black and white photograph (3 inch x 5 inch) of themselves to the Graduate Programs Office for inclusion in their records.

Programs of Study

The Graduate School of Business Administration offers courses leading to the degrees of Master of Business Administration, Master of Arts, and Doctor of Philosophy. Graduate training is given in these areas:

Accounting

Administrative Theory and Organizational Behavior

Business Administration Research Methods

Business Economics

Business, Government, and Society

Finance

International Business

Marketing

Operations and Systems Analysis

Personnel and Industrial Relations

Quantitative Methods

Transportation

Urban Development

The above areas shall not be held to exclude others that may be appropriate in special instances. There is no foreign language requirement for the M.A., M.B.A., or Ph.D. degrees.

Two options are offered in the master's degree programs—the Master of Business Administration (M.B.A.) and the Master of Arts (M.A.) in the business field.

Properly qualified students who are graduates of the University of Washington or of other colleges or universities of recognized rank may be admitted to the master's degree programs. Ordinarily, the applicant should have at least a B or 3.00 grade-point average for courses taken during the junior and senior years of his undergraduate study.

Students who do not meet the grade-point requirements may be recommended for admission if they can be properly accommodated, have achieved a high score on the Admission Test for Graduate Study in Business, and/or submit letters of recommendation or other evidence that they could succeed in graduate study.

Up to 9 graduate credits taken while a graduate student in the graduate school of another accredited institution may be accepted toward a master's degree. All work for a master's degree (including transfer credits) must be completed within six years.

Master of Business Administration

The M.B.A. program has been designed for students who have earned undergraduate degrees from accredited colleges. The nature of the degree, however, is not a limiting criterion. In respect to each entering class of students, diversity is sought from backgrounds in the social sciences, physical sciences, mathematics, law, engineering, medicine, business, as well as other fields. The interchange of ideas among a diversified student group provides an important dimension to the program.

Students are advised to prepare themselves in basic mathematics and in introductory computer programming needed for problem analysis in the program. Such courses are offered during Summer Quarter and may be taken by students who do not have this background and who are planning to start the program during Autumn Quarter. In general, the program starts each Autumn Quarter for the majority of entering students. (One section of 35 students will start Summer Quarter.) All students complete the first-year requirements during the same quarters and then proceed through the first year in blocks. That is, they will remain in the same group of approximately 35 students during each quarter while completing their first year.

The master's programs require two years (six quarters) of study for most students. Much of the first year is taken up with courses that introduce the student to the broad range of disciplines relevant to administration and provide him with the necessary background for more specialized study. The second year is devoted largely to elective courses selected by the student to meet his particular career interests and objectives.

Some first-year courses may be waived when appropriate. Such waivers are at the discretion of the department offering the course(s) in question. Waiver may be by proficiency or qualifying examinations or other means as stipulated by the particular department. First- and second-year requirements are as follows:

FIRST-YEAR REQUIREMENTS

Autumn Quarter	CREDITS
MACRO-ECON	3
ACCTG	3
INFO SYSTEMS	2
QUANT METH	3
AD & ORG THEORY	3
	<hr/> 14

Winter Quarter	CREDITS
MICRO-ECON	3
ACCTG	3
QUANT METH	3
AD & ORG THEORY	3
	<hr/> 12

Spring Quarter	CREDITS
MARKETING	3
FINANCE	3
OP & SYS ANAL	3
PUBLIC POLICY	3
	<hr/> 12

SECOND-YEAR REQUIREMENTS

Autumn Quarter	CREDITS
BUS, GOVT, & SOCIETY	3
BUS POLICY	3
ELECTIVES	6
	<hr/> 12

Winter Quarter	CREDITS
RESEARCH REPORT	3
ELECTIVES	9
	<hr/> 12

Spring Quarter	CREDITS
RESEARCH REPORT	3
ELECTIVES	9
	<hr/> 12

No more than 12 elective credits may be taken in the area of concentration, and no more than 6 in any other single area. At least 6 credits are required for an area of concentration. Students may use the Summer Quarter after the first year to start their second-year requirements.

Master of Arts

The M.A. program is designed for students who desire greater specialization than is possible under the M.B.A. program. Students electing the M.A. program usually have an objective other than preparation for a career as a professional manager; some are interested in becoming technical business specialists, some are interested in research careers, and others are interested in teaching careers in a limited subject area.

Students in the M.A. program must also complete these first-year requirements. They may select either the M.B.A. or M.A. alternative at any time prior to starting the second academic year. M.A. students must earn at least 15 credits, exclusive of thesis credit, in a major field in business; 9 credits in a minor that may be taken in another department or another college or school. In addition they must complete a thesis (9 credits).

If the minor is elected outside of the Graduate School of Business Administration, requirements of the department offering the minor must be met. There is no foreign language requirement. A final oral examination is given.

A maximum of 9 credits may be earned in approved upper-division courses.



Minor in Business Administration

Students working for a master's degree in other colleges who elect a minor in the Graduate School of Business Administration must have as a background 15 credits in acceptable courses in business administration. The student must earn a minimum of 15 credits in approved upper-division and graduate courses in one field of business administration.

Doctor of Philosophy

A requirement for consideration for admission to the doctoral program is a grade-point average of at least 3.25 during the preceding year of graduate study and submission of a score for the Admission Test for Graduate Study in Business. Usually an applicant is expected to have completed a master's degree prior to study toward the Ph.D. degree. Applications for admission to the doctoral program must be accompanied by three letters of recommendation, at least two of which must come from former instructors.

Requirements of study: The Ph.D. program is designed as advanced study in business administration for persons preparing for careers in teaching, research, business, and government; since the inception of the program, the majority of Doctor of Philosophy graduates have entered university teaching careers. Students who complete this program are expected to possess the professional administrative competency that is the objective of the M.B.A. program, and are required to demonstrate academic competence in four areas of study, at least three of which normally are in the Graduate School of Business Administration. In addition, the student must show evidence of competency in business research, computer technology, and a knowledge of economics and mathematics pertinent to his area. Thus, the objective of the Ph.D. program is to provide subject area specializations that will enable a graduate to participate actively in advancing the frontiers of knowledge both in teaching and research in his primary areas.

The residence requirement for the doctoral degree is three academic years, two of which must be at the University of Washington. Since one of the two years must be spent in continuous full-time residence (three out of four consecutive quarters), the residence requirement

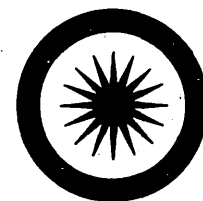
for the doctor's degree cannot be met solely with summer study. All work for the Ph.D. degree must be completed within ten years. (This includes applicable work that may be transferred from other institutions.) There is no foreign language requirement for this degree.

Admission to Candidacy: At the end of the student's two years of graduate study, as approved by his Supervisory Committee, the chairman of the committee may present to the Dean of the Graduate School for approval an application to take the General Examinations for admission to candidacy. The General Examinations consist of written and oral parts in all of the prospective candidate's areas. Written examinations are scheduled by the Ph.D. Faculty Program Committee through the Graduate Programs Office; students may sit for all written examinations in a single quarter, or they may sit for individual area examinations as scheduled during three consecutive academic quarters. The oral examination is taken after all written examinations have been passed.

No student is regarded by the Graduate School as a Candidate for the doctor's degree until after the report certifying the successful completion of the General Examinations has been filed with the Graduate School Office by the chairman of his Supervisory Committee. After his admission to candidacy, the student ordinarily devotes his time to the completion of his research work to be embodied in the dissertation and to preparation for his Final Examination.

Dissertation and Final Examination: The Candidate's dissertation must represent original and independent investigation. It should reflect not only his mastery of research techniques but also his ability to select an important problem for investigation and to deal with it competently. Instructions for the preparation of the dissertation in acceptable form may be obtained at the Graduate School Office.

The Final Examination is oral and normally will be taken no earlier than two quarters after the General Examination. It is primarily on the dissertation and its field, and will not be given until after the dissertation has been recommended by the Reading Committee for acceptance.



EDUCATION

Dean

Frederic T. Giles
210 Miller Hall

Associate Dean

Roger G. Olstad
210 Miller Hall

Assistant Dean

Homer Boroughs, Jr.
200 Miller Hall

Professors

Athol R. Baily, Dale L. Bolton, Homer Boroughs, Jr., Lawrence M. Brammer, J. Robert Briggs, Charles O. Burgess, Ellis D. Evans, Henry R. Fea, Clifford D. Foster, Maurice F. Freehill, Frederic T. Giles, Norris G. Haring, Alice H. Hayden, John Jarolimek, Theodore Kaltsounis, Jack E. Kittell, Arthur A. Lumsdaine, David L. Madsen, Roger G. Olstad, Francis F. Powers, Henry M. Reitan, Rufus C. Salyer, Gilbert Sax, Sam L. Sebesta, James O. Smith, George D. Strayer, Jr., Gerald M. Torkelson, Sylvia Vopni

Associate Professors

James Q. Affleck, Robert A. Anderson, Richard L. Andrews, James A. Banks, John W. Broedel, Frances A. Brown, Robert L. Brown, D. Cecil Clark, Ambrose A. Clegg, John P. Driscoll, Jerald R. Forster, Barbara B. Hauck, Richard L. Hawk, Frances P. Hunkins, D. David Island, Alan J. Klockars, Howard B. Larsen, Thomas C. Lovitt, Cecilia MacDonald, Rosemarie E.

McCartin, Merle L. Meacham, Dianne L. Monson, Percy D. Peckham, William J. Schill, Stanton P. Thalberg, Robert E. Tostberg

Assistant Professors

Husain I. Bashey, Robert A. Bass, Edward C. Caldwell, Robert G. Cope, Norma M. Dimmitt, Charles W. Dohner, Robert H. Fenner, Alberta J. Frerichs, Carol A. Gray, William A. Hurd, Mildred E. Kersh, George L. Lawrence, Gerald R. Lee, Sheila Lowenbraun, James J. A. Marshall, Doris Olch, Kenneth H. Ostrander, David B. Ryckman, John P. Smith, Joseph H. Stevens, Jr., Donald T. Williams, Jr.

Emeritus

Harriett V. Batie, John E. Corbally, August Dvorak

Lecturers and Instructors

Eleanor Evans, Raymond C. Schneider, Ivan L. Settles

Representatives of Departments and Schools Affiliated with the College of Education

Edgar V. Winans, David H. Spain (Anthropology); Spencer A. Moseley, Pauline B. Johnson (Art); Turrell V. Wylie, Isabelle Y. Yen (Asian Languages and Literature); Richard B. Walker, Walter Halperin (Biology-Botany and Zoology); Norman W. Gregory, David M. Ritter (Chemistry); J. B. McDiarmid, William M. Read (Classics); Peter Clarke, Linda M. Daniel (Communications); John D. Sydow, Geraldine B. Siks (Drama); Douglass C. North, D. A. Worcester (Economics);



Robert D. Stevick, William F. Irmscher (English); John C. Sherman, George H. Kakiuchi (Geography); John T. Whetten, Bates McKee (Geology); William H. Rey, Horst M. Rabura (Germanic Languages and Literature); Otis Pease, Thomas J. Pressly (History); Mary Louise Johnson, Grace C. Granberg (Home Economics); Donald C. Hellman, Ford R. Crull (Institute for Comparative and Foreign Area Studies); Irving Lieberman, Eleanor S. Ahlers (Librarianship); Ross A. Beaumont, J. Maurice Kingston (Mathematics); John T. Moore, Bessie Swanson (Music); G. Spencer Reeves, Katharine S. Fox (Physical and Health Education); Ronald Geballe, Arnold B. Arons (Physics); Kenneth M. Dolbeare, Alex Gottfried (Political Science), Earl B. Hunt, Samuel A. Bobrow (Psychology); Constantine Christofides, Pia Friedrich (Romance Languages and Literature); Walter Johnson, Sverre Arestad (Scandinavian Languages and Literature); Jack V. Haney, James E. Augerot (Slavic Languages and Literature); Otto N. Larsen, Joseph Cohen (Sociology); Thomas R. Nilsen, Jerry D. Feezel (Speech)

BUREAU OF SCHOOL SERVICE

Director

Richard A. Anderson
403 Miller

Special Consultant

Eleanor Evans

The teacher is the transmitter of knowledge to each generation; he is responsible for the continuation of his particular society and interpretations of it in relation to all other societies.

The College of Education offers programs for the preparation of teachers and school administrators, and programs for the advanced study of education. In conjunction with other colleges of the University, the College seeks to provide broad training in the liberal arts and sciences that is designed to develop the knowledge, understanding, skills, and abilities characteristic of citizenship in a free, democratic society.

The several programs offered by the College of Education in undergraduate and graduate work are designed to: (1) Help the prospective teacher develop competence and sophistication in one or more teaching fields and to develop proficiency in the teaching process through study and practice. (2) Introduce students to the study of education as a basic social institution and to the profession of teaching. (3) Through research, observation, and direct experience, develop the understanding of growth and development in children, youths, and adults. (4) Develop the understanding of teaching and learning processes as they affect the selec-

tion, organization, presentation, and evaluation of curriculum materials and resources for various age levels and ability groups. (5) Promote and foster research and advanced study in the several branches of the field of education for which post-baccalaureate work is appropriate. (6) Assist each student in developing a workable philosophy of education and an appreciation of the ethical responsibilities of a professional educator in a free society. An extensive schedule of classroom observation and directed teaching is made available through cooperative arrangement with the public schools in the greater Seattle area.

Through the Bureau of School Service, the College and University provide a wide variety of professional services to the schools and communities of the state of Washington.

Accreditation

Full accreditation, retroactive to September 1, 1965, has been granted to the College by the National Council for the Accreditation of Teacher Education. The College is also a member of the University Council for Educational Administration.

College Facilities and Services

The *College of Education Record* is published four times a year. In addition to book reviews, education news notes, and occasional College announcements, the journal contains articles on a variety of subjects for teachers and administrators. Bulletins on the graduate degree program and the training of public school teachers keep students and educators acquainted with changes in these areas.

The College of Education maintains a close liaison with public schools both in the Seattle area and throughout the state. In cooperation with the State Department of Public Instruction and school districts in all parts of the state, the College carries out the training program for the Standard Certificate through in-service work, individual visits, and conferences with beginning teachers and their administrators. The College also maintains special programs for observation, research, and practice in the schools of the Seattle area and other districts; the teaching practicum provides every person who seeks a teaching certificate with an opportunity to develop and demonstrate competence by working with master teachers.

Employment

The Office of School and College Placement helps qualified students and graduates find teaching and administrative positions. Those who wish to use this service should register with the Office, 301 Loew Hall,

during the first quarter of their final year, and should obtain recommendations before leaving the University, while their work and personal qualities are clear in the minds of their instructors. These records are kept in the office files for use when needed.

Student Activities

Any college student who is preparing to teach may become a member of the *Student Education Association* (SEA) by joining the College chapter. Campus meetings are held on a regular schedule; in addition, there are four regional meetings a year and a state convention in the spring.

Phi Delta Kappa, for men, and *Pi Lambda Theta*, for women, are national professional organizations for education students. Upper-division and graduate students who maintain high scholarship and show outstanding professional promise may be invited to join one of these organizations.

UNDERGRADUATE PROGRAMS

Advisory Office

Rufus C. Salyer
Director, Advisory Services
207 Miller Hall

Administrative Assistant

Jane Watt
207 Miller Hall

Students should be cognizant that admission to the College of Education is dependent upon the individual's eligibility for admission, enrollment, and registration at the University of Washington.

A minimum of 90 approved credits is required of transfer students for admission to the College of Education. It should be understood that admission to the College of Education does not guarantee admission to the Teacher Education Program (see section on "Admission to the Teacher Education Program").

Students transferring from other colleges and schools within the University are required to have been already admitted to the Teacher Education Program (see section on "Admission to the Teacher Education Program").

Bachelor of Arts

Students working toward the Bachelor of Arts degree in the College of Education must meet certain general requirements of the University and the College as well as the particular requirements of their major and minor departments.

Requirements for the Bachelor of Arts degree awarded by the College of Education were instituted and took effect Autumn Quarter, 1964. Students entering the College of Education during that quarter and thereafter are governed by these requirements.

To qualify for the Bachelor of Arts degree, students in the College of Education, in addition to meeting the University requirements, must fulfill basic proficiency requirements, a distribution requirement, a major and minor requirement, and a certification requirement.

Basic Proficiencies

All incoming students whose high school program included 3 units (years) of college preparatory mathematics, 3 units (years) of a single foreign language, and 4 units (years) of English, will be considered to have satisfied the basic proficiency requirements. Students who do not satisfy the requirements in this way are required during the first year in residence to complete 15 credits normally selected from such courses in English composition, foreign language, or mathematics as he and his adviser consider most appropriate to his needs and interests. Incoming students with 90 or more acceptable transfer credits, and students who have fulfilled the general education requirements of other accredited colleges or universities, will be considered to have satisfied the basic proficiency requirements. Courses taken to satisfy the basic proficiency requirements will normally not be accepted in satisfaction of the distribution requirement.

Distribution Requirement

The College reserves an appreciable fraction of the student's four undergraduate years to develop in him a breadth of knowledge and appreciation and to enable him to explore subjects different in content and method from those in which he will pursue a special competence. For the purposes of general education, a listing of appropriate courses has been prepared, divided into three large fields of knowledge—the humanities, the social sciences, and the natural sciences. Each student must select, with the approval of his adviser, courses from the following list to total at least 60 credits, distributed so that no fewer than 20 credits are in any one of the three basic areas. In meeting the distribution requirement, no more than 20 credits of the total shall be taken from any one department.

For courses available, please refer to the "Distribution List" at the beginning of the *College of Arts and Sciences* section.

Major and Minor Requirements

The College of Education requires for graduation the satisfactory completion of an approved *major* and *mi-*



nor. Students electing an elementary school teaching emphasis will complete a minor in Elementary Education. In certain instances, a major and minor may be taken in different aspects of the same field, but only where such a procedure is clearly appropriate to preparation for teaching. Such major-minor combinations must be approved by the Dean and the Executive Committee of the College of Education. Major or minor departmental requirements are indicated under Programs in Education.

TEACHER CERTIFICATION

Teacher education and certification in the state of Washington are controlled by the State Board of Education. All colleges and universities preparing teachers must conform to the general certification pattern established by the Board. Two certificates are available within the regular certification pattern—the *Provisional Certificate*, the initial teaching certificate, and the *Standard Certificate*.

The *Provisional Certificate* is a temporary teaching certificate that is valid for a three-year period and is renewable *once* for an additional three-year period. Completion of 12 quarter credits *after* issuance of the Provisional Certificate plus a minimum of one year of successful teaching is necessary to renew the certificate for a second three-year period. For those who have not taught during the three-year period, the Provisional Certificate may be renewed upon application to the State Department of Public Instruction in Olympia. The certificate will show the subject areas of competence as well as the level(s) on which the holder is prepared to teach. Beginning teachers are to be assigned in accordance with their stipulated competencies.

The *Standard Certificate* requirements must be completed during the six-year period of the Provisional Certificate. The Standard Certificate is valid as long as the holder teaches and for five years thereafter.

All persons seeking certification at the University of Washington must have been admitted to the Teacher Education Program. Requirements for teaching certificates shall be those prescribed by the College of Education at the time the certificate is to be granted.

Specific details concerning the earning of each of the certificates at the University of Washington are presented in the discussion following this introduction.

Information on out-of-state transfers and emergency and special certificates can be obtained from the State Department of Public Instruction, Olympia, Washington.

The certificate patterns outlined below provide the typical student a program approved by the faculty of the College of Education that is consonant with the requirements of the State Board of Education. Students who can demonstrate equivalent competence in any of the stipulated areas, as indicated by previous course work or by the successful completion of advanced credit examinations, may petition through the Advisory Office in the College of Education for appropriate waivers. Courses in professional education completed eleven or more years before admission or readmission are not applicable on certification requirements. Such courses may be reestablished by examination.

The professional course sequence outlined for the Provisional and Standard Certificates makes provisions for the gaining of an understanding of various age groups, a comprehension of the learning process, an introduction to the techniques and methods employed in the classroom, information concerning the history and philosophy of American education, all brought into focus through the Field Experience Program.

Field practicums required of all students include introductory classroom observation, participation, and directed classroom teaching. In addition, elective field experiences in classroom teaching and in community service are available. To provide sufficient time for arranging individual practicum assignments, students are required to pre-enroll in all field experience courses. Complete information about these courses and their application deadlines may be obtained from the Director of Field Experience, 200 Miller Hall.

Students are urged to participate in a "September Experience" program that is explained fully in the Introduction to Teaching course (Education 288); complete information is also available from the Director of Field Experience, 200 Miller Hall.

Admission to the Teacher Education Program (Provisional Certification)*

1. A minimum of 90 approved credits (exclusive of credits earned through independent study or extension classes).
2. A cumulative grade-point average of 2.50 (exclusive of credits earned through Independent Study or extension classes). Students presenting fewer than 30 quarter credits earned at the University of Washington shall have their GPA computed upon total college credits; those with 30 credits or more earned at the University of Washington shall have their GPA computed upon University of Washington credits *only*.

3. Proof of physical and mental health giving promise of success in teaching.
4. Satisfactory completion of Education 288, Introduction to Teaching or approved University substitute.
5. Formal application.
6. Admission is contingent upon availability of faculty and physical resources and space available in existing teacher education patterns.

The Provisional Certificate

The College of Education offers six patterns at the elementary school level, leading to the Provisional Certificate. (1) General (standard) Elementary (kindergarten, primary, intermediate, middle school levels), (2) Early Childhood (pre-kindergarten and primary levels), (3) Elementary Music, (4) Inner City (Seattle), (5) Indian Education, (6) Communication Disorders.

In addition, the General (standard) Elementary pattern is available in a field-oriented, three-quarter block in the Seattle, Shoreline, and Northshore school districts. The College also offers one General (standard) pattern at the secondary level which is available in a field-oriented two-quarter block in the same districts. For complete information, contact the Advisory Office, 207 Miller Hall, or the Office of Field Experience, 200 Miller Hall.

The Provisional Certificate will be awarded upon demonstration of such general scholarship and such evidence of physical and mental health as give promise of success, and upon completion of (1) a bachelor's degree; (2) an authorized major (2.00 minimum grade-point average required); (3) an authorized minor, elementary level only or, where required, on secondary level, (2.00 minimum grade-point average required); (4) the appropriate professional education sequence; (5) an approved teaching practicum. Formal admission to any phase of the Teacher Education Program is required.

* Effective September 1, 1969

To Insure Proper Registration

Specific areas in the College of Education course numbering system are designated by capital letters. To insure registration for the proper courses, it is absolutely necessary that these designation letters be written on the student's Official Program, preceding each course number.

Designation letters and their definitions are:

EDADM Educational Administration

EDC&I	Educational Curriculum and Instruction
EDHED	Higher Education
EDEPS	Educational Policy Studies
EDPSY	Educational Psychology
EDSPE	Special Education
EDUC	Independent study, research, and field experience (teaching practicum)

The Professional Education Sequence (A)

Designed for the Early Childhood Education Minor (pre-kindergarten and primary grades).

Admission to any professional education course in this sequence requires prior admission to the Teacher Education Program.

Track I Emphasis: Pre-Kindergarten Level COURSES

	CREDITS
*SPCH 103 Basic Principles of Oral Communication (5) or	
*SPCH 203 Principles of Oral Communication (3)	3 or 5
EDPSY 304 Educational Psychology	5
EDPSY 308 Evaluation in Education	3
EDUC 402 Practicum in Classroom Teaching and Management: Early Childhood, Kindergarten, Primary. (Taken concurrently with EDC&I 350, Program Planning in Early Childhood Education.) Prerequisites, EDPSY 304, EDPSY 308, completion of required portion of the Early Childhood Education Minor, 2.00 minimum grade-point average in professional education, 120 credits, and permission	9
EDUC 402 Practicum in Classroom Teaching and Management: Kindergarten or Primary. Prerequisites, EDPSY 304, the speech requirement, completion of required portion of the Early Childhood Education Minor, 2.00 minimum grade-point average in professional education, 120 credits, and permission	9
EDEPS 410 OR 412 OR 479 OR 480 OR 488 Educational Sociology or Foundations of Freedom and Education or Crucial Issues in Education or History of Educational Thought or Philosophy of Education. Prerequisite EDUC 402. Completion of one of these courses will satisfy requirement. Studies may, with approval of advisory office of the College of Education, delay fulfillment of this requirement until fifth year. (Standard Certification Program)	3

31-33

*Students having completed one or more semesters of speech (principles, theory, and proficiency) in high school may petition for an examination that, if passed, may be substituted for the speech requirement without academic credit. Transfer students with one or more college speech courses may apply for a waiver. Address all questions to the Department of Speech.

Track II Emphasis: Primary Level, K-3

*SPCH 103 Basic Principles of Oral Communication (5) or	
*SPCH 203 Principles of Oral Communication (3)	3 or 5
EDPSY 304 Educational Psychology	5
EDPSY 308 Evaluation in Education	3
EDUC 302 Introductory Practicum in Classroom Teaching and Management	3
EDUC 402 Practicum in Classroom Teaching and Management: Early Childhood, Kindergarten, Primary. Prerequisites, EDPSY 304, EDPSY 308, the	



speech requirement, completion of required portion of the Early Childhood Education Minor, 2.00 minimum grade-point average in professional education, 120 credits, and permission . . . 18

EDEPS 410 OR 412 OR 479 OR 480 OR 488 Educational Sociology or Foundations of Freedom and Education or Crucial Issues in Education or History of Educational Thought or Philosophy of Education. Prerequisite, EDUC 402. Completion of one of these courses will satisfy requirement. Students may, with the approval of advisory office of the College of Education, delay fulfillment of this requirement until fifth year (Standard Certification Program) . . . 3
35-37

*Students having completed one or more semesters of speech (principles, theory, and proficiency) in high school may petition for an examination that, if passed, may be substituted for the speech requirement without academic credit. Transfer students with one or more college speech courses may apply for a waiver. Address all questions to the Department of Speech.

The Professional Early Childhood Education Minor

(Requirements are 47 credits for Track I and 44 credits for Track II for Provisional Certification)

COURSES	CREDITS
EDPSY 365 Sensory-Motor and Language Development in Young Children. Prerequisite, EDPSY 304	3
EDC&I 347 Modern Theories and Practices in Early Childhood Education	3
GEOG 100 Introduction to Geography	5
EDC&I 348 Language Arts and Social Studies in Early Education. Prerequisites, EDPSY 304 and GEOG 100	3
EDC&I 349 Mathematics and Science in Early Childhood Education. Prerequisites, EDPSY 304 and MATH 170, in addition, a minimum of 5 credits is required in a science course to be selected from the following list (select one): Atmospheric Sciences 101; Biology 101-102 (10 credits); Botany 113, 220; Chemistry 100, 101; Geological Sciences 101; Oceanography 101; Physics 101-102, 110 111; Zoology 118	5
MATH 170 Theory of Arithmetic	3
**EDC&I 350 Program Planning in Early Childhood Education. Applicable to Track I students only. To be taken concurrently with EDUC 402, 9 credits. Prerequisites EDPSY 304, the speech requirement, completion of required portion of the Elementary Education Minor, 2.00 minimum grade-point average in professional education, 120 credits, and permission	3
EDC&I 360 Reading in the Elementary School. Prerequisite EDPSY 304	3
PSYCH 320 Field Analysis of the Behavior of Young Children. Prerequisite, EDPSY 304 or PSYCH 306	3
*ART 100 Introduction to Art	3
*EDC&I 342 Art in the Elementary School. Prerequisites, EDPSY 304 and Art 100	3
*MUSIC 119 Music Fundamentals	2
*EDC&I 343 Music in the Elementary School, Intermediate Grades. Prerequisites, EDPSY 304 and Music 119	3
*EDC&I 321 Health in the Elementary School. Prerequisite, EDPSY 304	2
*EDC&I 322, 323 OR 324 Physical Education in the Elementary School. Prerequisite EDPSY 304	3

*Students are normally expected to complete *all* of the requirements for the Early Childhood Education minor prior to Provisional Certification. *One* of the starred courses must be included prior to the teaching practicum and for the Provisional Certificate. The others may, with the approval of the Advisory Office of the

College of Education, be deferred until the fifth year (Standard Certification Program).

**EDC&I 350 Program Planning in Early Childhood Education. A fifth-year (Standard Certificate) requirement for Track II students.

The Professional Education Sequence (B)

Designed for the General (Standard) Elementary Education Minor and the Elementary School Communication Disorders Minor.

Admission to any professional course in this sequence requires prior admission to the Teacher Education Program.

COURSES	CREDITS
*SPCH 103 Basic Principles of Oral Communication (5) or	
*SPCH 203 Principles of Oral Communication (3)	3 or 5
EDPSY 304 Educational Psychology	5
EDPSY 308 Evaluation in Education	3
EDUC 402 OR 403 Practicum in Classroom Teaching and Management: Early Childhood, Kindergarten, Primary, or Practicum in Classroom Teaching or Management: Intermediate Grades, Middle School. Prerequisites, EDPSY 304, the speech requirement, completion of required portion of the Elementary Education Minor, 2.00 minimum grade-point average in professional education, 120 credits, and permission	18
EDEPS 410 OR 412 OR 479 OR 480 OR 488 Educational Sociology or Foundations of Freedom and Education or Crucial Issues of Education or History of Educational Thought or Philosophy of Education. Prerequisite, EDUC 402 or 403. Completion of one of these courses will satisfy requirement. Students may, with the approval of Advisory Office of the College of Education, delay fulfillment of requirement until this fifth year (Standard Certification Program)	3
**HSTAA 432 History of Washington and the Pacific Northwest	5

37-39

*Students having completed one or more semesters of speech (principles, theory and proficiency) in high school may petition for an examination that, if passed, may be substituted for the speech requirement without academic credit. Transfer students with one or more college speech courses may apply for a waiver. Address all questions to the Department of Speech.

**Required of intermediate grade teachers only. May be taken during the fifth year but *must* be completed *before* Standard Certification.

The General Elementary Education Minor

(Requirements are 41 credits for Provisional Certification.)

COURSES	CREDITS
EDC&I 355 Language Arts in the Elementary School. Prerequisite, EDPSY 304	3
EDC&I 360 Reading in the Elementary School. Prerequisite, EDPSY 304	3
GEOG 100 Introduction to Geography	5
EDC&I 365 Social Studies in the Elementary School. Prerequisites, EDPSY 304 and GEOG 100	3
EDC&I 370 Science in the Elementary School. Prerequisite, EDPSY 304. In addition, a minimum of 5 credits is required in a science course to be selected from the following list (select one): Atmospheric Sciences 101; Biology 101-102 (10 credits); Botany 113, 220; Chemistry 100, 101;	

	Geological Sciences 101; Oceanography 101; Physics 101-102, 110, 111; Zoology 118	5
MATH 170	Theory of Arithmetic	3
EDC&I 375	Mathematics in the Elementary School. Prerequisites, EDPSY 304 and MATH 170	3
*ART 100	Introduction to Art	3
*EDC&I 342	Art in the Elementary School. Prerequisites, EDPSY 304 and ART 100	3
*MUSIC 119	Music Fundamentals	2
*EDC&I 343	Music in the Elementary School. Prerequisites, EDPSY 304 and Music 119	3
*EDC&I 321	Health in the Elementary School. Prerequisite, EDPSY 304	2
*EDC&I 322, 323, OR 324	Physical Education in the Elementary School. Prerequisite, EDPSY 304	3
TOTAL CREDITS		41

*Students are normally expected to complete *all* of the requirements for the Elementary Education minor prior to Provisional Certification. *One* of the starred courses must be included prior to the teaching practicum and for the Provisional Certificate. The others may, with the approval of the Advisory Office of the College of Education, be deferred until the fifth year (Standard Certification Program).

The Elementary School Communication Disorders Minor

(Requirements are 30 credits for Provisional Certification.) A total of 30 approved credits is required, including the following courses:

COURSES		CREDITS
EDC&I 360	Reading in the Elementary School. Prerequisite, EDPSY 304	3
EDC&I 320	Organization of School Programs in Communication Disorders. Prerequisites, EDPSY 304, and SPCH 351 or 391	3
EDPSY 401	Advanced Educational Psychology—Learning. Prerequisite, EDPSY 304	3
SPCH 432	Interview Techniques for Communication Disorders. Prerequisites, SPCH 250 and junior standing	2
		11

In addition, 19 approved credits must be elected from the following:

DRAMA 338	Creative Dramatics	3
EDC&I 347	Modern Theories and Practices in Early Childhood Education. Prerequisite, EDUC 288	3
EDC&I 355	Language Arts in the Elementary School. Prerequisite, EDPSY 304	3
EDPSY 365	Sensory-Motor and Language Development in Young Children. Prerequisite, EDPSY 304	3
EDPSY 402	Advanced Child Development. Prerequisites, EDPSY 304 and 401	3
EDPSY 447	Principles of Guidance	3
EDSPE 403	Education of the Emotionally Disturbed. Prerequisite, EDSPE 404	3
EDSPE 403	Exceptional Children. Prerequisite, EDPSY 304	3
EDSPE 405	Educating the Mentally Retarded	3
EDSPE 409	Mental Retardation. Prerequisite, EDSPE 404 or equivalent	3
EDSPE 411	Learning Disabilities. Prerequisite, EDSPE 404	3
EDSPE 414	Education of the Exceptional Individual in the Inner City. Prerequisite, EDSPE 404	3
EDSPE 416	Evaluation of Instructional Material for Exceptional Children. Prerequisite, EDSPE 404	3
EDSPE 418	Vocational Development of Handicapped Children and Youth	3
LING 200	Introduction to Linguistics	5
LING 400	Survey of Linguistic Method and Theory	3

PSYCH 305	Deviant Personality. Prerequisites, PSYCH 100 or 190 and 10 credits in Psychology	5
PSYCH 306	Developmental Psychology. Prerequisite, PSYCH 100 or 190	5
PSYCH 320	Field Analysis of the Behavior of Young Children. Prerequisite, EDPSY 304 or PSYCH 306	3
PSYCH 410	Deviant Development. Prerequisites, PSYCH 305, 306	5
SPCH 355	Speech in the Elementary Classroom. Prerequisites, junior standing and EDUC 288	3
SPCH 451	Speech Pathology-Audiology Practicum in the Schools. Prerequisites, SPCH 350 and permission 1-2	

The Elementary School Indian Education Minor

(Requirements are 67 credits, including the professional education sequence, for Provisional Certification)

COURSES		CREDITS
EDUC 302	Introductory Practicum in Classroom Teaching and Management	3
EDPSY 304	Educational Psychology	5
EDPSY 308	Evaluation in Education	3
EDC&I 360	Reading in the Elementary School	3
EDC&I 355	Language Arts in the Elementary School (Linguistics 455 may be substituted for EDC&I 355)	3
EDC&I 370	Science in the Elementary School. Prerequisite, 5 approved credits in science	5
MATH 170	Theory of Arithmetic	3
EDC&I 375	Mathematics in the Elementary School	3
GEOG 100	Introduction to Geography	5
EDC&I 365	Social Studies in the Elementary School	3
EDC&I 321	Health in the Elementary School	2
EDC&I 464	The Indian Child and His Education	5
EDPSY 447	Principles of Guidance	3
EDUC 402	Practicum in Classroom Teaching and Management: Early Childhood, Kindergarten, Primary (18) or	
EDUC 403	Practicum in Classroom Teaching and Management: Intermediate Grades, Middle School (18)	18

The Elementary School or Middle School Inner-City Minor

(Requirements are 55-56 credits, including the professional sequence, for Provisional Certification)

Duration: Three consecutive quarters (excluding Summer Quarter). Prerequisites: 2.50 (minimum grade-point average); 90 credits (minimum). Must have completed Mathematics 170, Art 100, or Music 119, Speech 103 or 203, Geography 100, 5 approved credits in science. Selection based upon personal qualities and commitment to "inner city" teaching. Selection into the program admits the student to the Teacher Education Program. Enrollment limited to ten students per quarter.

COURSES		CREDITS
EDPSY 304	Educational Psychology	5
EDPSY 308	Evaluation in Education	3
EDC&I 355	Language Arts in the Elementary School	3
EDC&I 360	Reading in the Elementary School	3
EDC&I 375	Mathematics in the Elementary School	3
EDC&I 496	*Workshop in Instructional Improvement (Teaching Strategies) (6) or **Special Methods (2 or 3) (3)	5-6
	Socio-ethnic Education (courses will be recommended to the intern) (3) (3) (3)	9
EDUC 402	Practicum in Classroom Teaching and Manage- ment: Early Childhood, Kindergarten, Primary (24) or	



EDUC 403 Practicum in Classroom Teaching and Management: Intermediate Grades, Middle School (24) . 24

*Early Childhood, Kindergarten, Primary only

**Intermediate Grades, Middle School only

Elementary School Music Specialist

EDUC 302 (Music Section) and Admission to the Teacher Education Program required)

The Professional Education Sequence

COURSES	CREDITS
*SPCH 203 Principles of Oral Communication	3
EDPSY 304 Educational Psychology	5
EDPSY 308 Evaluation in Education	3
EDUC 402 Practicum in Classroom Teaching and Management: Early Childhood, Kindergarten, Primary and	
EDUC 403 Practicum in Classroom Teaching and Management: Intermediate Grades, Middle School. Prerequisites, the courses listed above and Music 340, 440, and 441 (with permission, Music 440 or 441 may be taken concurrently)	18
EDEPS 410 or 412 or 479 or 480 or 488. Educational Sociology or Foundations of Freedom and Education or Crucial Issues in Education or History of Educational Thought or Philosophy of Education. Prerequisite, EDUC 402 or 403. Completion of one of these courses will satisfy requirement. Students may, with the approval of the Advisory Office of the College of Education, delay fulfillment of this requirement until fifth year (Standard Certification Program)	3
	32

* Students having completed one or more semesters of speech (principles, theory, and proficiency) in high school may petition for an examination that, if passed, may be substituted for the speech requirement without academic credit. Transfer students with one or more college speech courses may apply for a waiver. Address all questions to the Department of Speech.

Combined Music Education Major and Minor

(Requirements are 96-97 credits in music for Provisional Certification [College of Education only]. See Music listing showing Major and Minor Programs in Education.)

The Provisional Certificate

(Secondary Emphasis, Grades 7-12)

The Provisional Certificate (secondary emphasis) will be awarded upon demonstration of such general scholarship and such evidence of physical and mental health as give promise of success, and upon completion of (1) a bachelor's degree, (2) an authorized major (2.00 minimum grade-point average required), (3) the professional education sequence (secondary), (4) Teaching Practicum. Admission to any phase of the Teacher Education Program is not automatic.

The Professional Education Sequence

(Secondary Emphasis)

Admission to any professional education course in this sequence requires prior admission to the Teacher Education Program.

*SPCH 203 Principles of Oral Communication	3
or	
*SPCH 103 Basic Principles of Oral Communication (5)	3 or 5
EDPSY 304 Educational Psychology	5

EDPSY 308 Evaluation in Education 3
 **EDCAI Special Methods (as required) 3-6
 EDUC 404 Practicum in Classroom Teaching and Management: Secondary School. Prerequisites, the speech requirement, EDPSY 304, EDPSY 308, Special Methods, 120 credits, 2.00 grade-point minimum average in professional education, and permission. Students enrolling in student Teaching Practicum with majors in a Social Studies Field must have completed course work in Geography, Economics, World History, United States History, and Washington State History prior to the teaching practicum 18

EDEPS 410 or 412 or 479 or 480 or 488 Educational Sociology or Foundations of Freedom and Education or Crucial Issues in Education or History of Educational Thought or Philosophy of Education. Prerequisite, EDUC 404. Completion of one of these courses will satisfy this requirement. Students may, with the approval of the Advisory Office of the College of Education, delay fulfillment of this requirement until the fifth year (Standard Certification Program) 3
 35-40

* Students having completed one or more semesters of speech (principles, theory, and proficiency) in high school may petition for an examination that, if passed, may be substituted for the speech requirement without academic credit. Transfer students with one or more college speech courses may apply for a waiver. Address all questions to the Department of Speech.

** For all secondary teaching fields, except drama, one or more special methods courses are required. For specific information contact the Advisory Office, 207 Miller Hall. Students are reminded that this is a professional requirement not usually shown within the major course listing.

MAJOR AND MINOR PROGRAMS IN EDUCATION

Following is a listing of the major and minor academic fields for elementary and secondary teachers. It is the responsibility of the student to consult the department in which he plans to take his work to verify the requirements.

Anthropology

Teaching Major: Secondary School Emphasis

(45 approved credits required)

COURSES	CREDITS
ANTH 202 Principals of Social Anthropology	5
ANTH 311 Indian Cultures of the Pacific Northwest (3)	3
or	
ANTH 416 North American Indians (3)	3
ARCHY 205 Principles of Archaeology	5
PHY A 201 Principles of Physical Anthropology	5

Select 10 credits from the following:

ANTH 350 The Civilized and the Primitive	3
ANTH 429 Expressive Culture	5
ANTH 430 Music: an Anthropological View	3
ANTH 436 Social Anthropology of Religion	5
ANTH 439 Primitive Law and Social Control	5
ANTH 450 Introduction to Language	5
ARCHY 304 Prehistoric Cultures of the New World	3

Teaching Minor: Secondary School Emphasis

(35 approved credits required)

ANTH 202 Principles of Social Anthropology	5
ARCHY 205 Principles of Archaeology	3

PHY A 201	Principles of Physical Anthropology	5
Approved anthropology electives chosen after consultation regarding the student's special field of interest		20

Art

***Combined Teaching Major and Minor: Option I Secondary School Specialization (6-12); Option II Elementary School Specialization (K-8); Option III Elementary and Secondary School Specialization (K-12).**

(88-91 approved credits required)

COURSES	CREDITS
ART 105, 106, 107 Drawing (3,3,3)	9
ART 109, 110 Design (3,3)	6
ART 129 Appreciation of Design	2
ART H 201, 202, 203 History of Western Art (5,3,3)	11
ART 210 Art and the Individual (3); Art 211 Art in the Schools (3); Art 212 Art in the Community (3)	9
ART 250, 251, 252, 253, 254, 255 Design and Materials (3,3,3,3,3) To Total	3
ART 256 Painting (3); Art 259 Water-Soluble Media (3)	6
ART 305 Art Education: Crafts (3) or Art 201 Ceramic Art (3)	3
ART 301, 302, 303, 304 Art Education: Crafts (3,3,3,3) To Total	3
ART 272 Beginning Sculpture Composition (3); or Art 350 Introduction to Printmaking (3); or Art 358 Jewelry Design (5)	3 or 5
Approved art electives for combined teaching major and minor 30	
EDCAI 340 Elementary Art Education (3) (Options II and III) or	
EDCAI 341 The Teaching of Art in the Secondary School (Options I and III) (3)	3 or 6

*Satisfaction of the Combined Teaching Major and Minor also satisfies the minor area degree requirements within the College of Education. A major in art may be taken without a minor in the Elementary School Option II and in the Secondary School Option I. Option III Elementary and Secondary School Specialization must take both the major and minor in art.

Art Major: Elementary School Emphasis
(52 approved credits required) . . .

ART 105, 106, 107 Drawing (3,3,3)	9
ART 109, 110 Design (3,3)	6
ART 129 Appreciation of Design	2
ART H 201, 202, 203 History of Western Art (5,3,3)	11
ART 256 Painting (3); Art 259 Water-Soluble Media (3)	6
ART 302, 303, 304, 305 Art Education: Crafts (3,3,3,3) To Total	6
Approved art electives	9
EDCAI 342 Art in the Elementary School	3

Biology

Biology Teaching Major: Secondary School Emphasis

(52-65 approved credits required. Of these, no more than 20 credits will be allowed for freshman-level courses. The biology major should give serious consideration to chemistry as his minor academic field.)

COURSES	CREDITS
BIOL 101-102 General Biology (5-5) and	
BOT 220 The Plant Kingdom (5), 113 Elementary Plant Classification (5) or Biol 210, 211, 212 Introductory Biology (5,5,5)	20-25
CHEM 102 General and Organic Chemistry (5) or Other organic chemistry courses including laboratory	3-5
Genetics 451 (4), Microbiology 301 (3) and 302 (2), and four courses from the following five categories: plant physiology, animal physiology, vertebrate zoology, invertebrate zoology, ethnology or ecology (at least three of these four courses should include laboratory work)	29-35

Biology Major: Elementary School Emphasis

(43-50 approved credits required. Of these, no more than 20 credits will be allowed for freshman-level courses.)

BIOL 101-102	General Biology (5-5) and	
BOT 220	The Plant Kingdom (5), 113 Elementary Plant Classification (5) or	
BIOL 210, 211, 212	Introductory Biology (5,5,5)	15-20
CHEM 102	General and Organic Chemistry (5) or other organic chemistry courses including laboratory	3-5
Approved electives in advanced courses must include at least 5 credits in botany and 10 credits in zoology		25
RECOMMENDED ADVANCED COURSES:		
BOT 201, 202, 203	Plant Propagation (2,2,2)	
BOT 331	Ornamental Plants (3)	
BOT 371	Elementary Plant Physiology (5)	
GENETICS 351	Human Genetics: The Individual and Society (3) or 451 Genetics (4)	
MICRO 301	General Microbiology (3) or 400 Fundamentals of Bacteriology Laboratory (3)	
ZOOL 208	Elementary Human Physiology (5) or 301 Introductory Physiology (3)	
ZOOL 330	Natural History of Marine Invertebrates (5)	
ZOOL 362	Natural History of Vertebrates (5)	
ZOOL 458	Vertebrate Physiology (5) or 468 Comparative Physiology (5)	

Teaching Minor: Secondary School Emphasis

(30 approved credits required. In addition to elementary courses, at least one course in botany and one course in zoology are required. One 5-credit course must be upper division. The Biology Teaching Minor is recommended only for students whose teaching major is in one of the sciences.)

Black Studies

Teaching Major: Secondary School Emphasis
(62-65 approved credits required)

TRACK A: SOCIAL STUDIES

COURSES	CREDITS
SOC S 150 Afro-American History	5
HSTAA 201 Survey of the History of the United States	5
HSTAA 432 History of Washington and the Pacific Northwest	5
HST 113 The Modern World	5
GEOG 100 Introduction to Geography	5
ECON 200 Introduction to Economics	5
HST 495 The Teaching of Black, Chicano, and Indian History and Culture	5
POL S 210 Ethnic Minorities and American Politics (5) or	
SOC 105 Sociology of Black Americans (5)	5
plus 25 approved credits from the following Black Studies	
Core Courses:	
ANTH 111 Afro-American Culture	3
ANTH 212 Perspectives on Afro-American Culture	3
PHY A 281 African Origins: Social Biology of Sub-Saharan Africa	3
PHY A 282 Afro-Americans: Social Biology of Blacks in the New World	3
GEOG 227 Historical Geography of Black America	3
HST 361 Slavery in History: A Comparative Study	5
HST 362 The Ending of Slavery in History: A Comparative Study	5
HST 421 Africa South of the Sahara	5
HSTAA 443 Black Americans, 1877-1933: From Reconstruction to the New Deal	5
HSTAA 444 Black Americans Since 1933: From the New Deal to the Present	5
PSYCH 250 Racism and Minority Groups	4
PSYCH 260 Psychological Aspects of Poverty	3
PSYCH 443 Social Psychology of Prejudice	3
SOC 362 Race Relations	5
SOC 463 American Negro Community	3
ENGL 369 The Literature of Black America	5

**TRACK B: LANGUAGE ARTS**

ENGL 369	The Literature of Black America	5
ENGL 483	Special Topics in English for Teachers	1-3
*ENGL 257	Introduction to Poetry	5
ENGL 271	Advanced Expository Writing	3
ENGL 277	Beginning Short Story Writing	3
ENGL 387	English Grammar (5) or	
ENGL 447	History of the English Language (5)	5
ENGL 361	American Literature: Beginnings to 1800 (5) or	
ENGL 362	American Literature: 1800-1865 (5) or	
ENGL 363	American Literature: 1865-1914 (5)	5
SOC S 150	Afro-American History	5

In addition, 30 approved credits from the following Black Studies Core Courses:

DRAMA 490	Special Studies in Acting-Directing	3
CLIT 261, 262, 263	Modern African Literature (3,3,3)	9
*ENGL 251	Introduction to World Literature	5
*ENGL 258	Introduction to Fiction	5
*ENGL 435	American Literature: Since 1945	5
*ENGL 499	Special Studies in Literature	5
SPCH 100	Voice and Articulation Improvement	3
SPCH 140	Oral Interpretation of Literature	5
SPCH 329	Rhetoric of Social and Political Movements	5

*Sections in which Black Literature is given special emphasis. Please consult with an adviser regarding appropriate selection of sections.

Black Studies Major: Elementary School Emphasis

(62-64 approved credits required, the same as for the Teaching Majors: Secondary School Emphasis, Track A or Track B.)

Teaching Minor: Secondary School Emphasis

(35 approved credits from Track A or Track B required)

Business Education**Teaching Major: Secondary School Emphasis**

(50 approved credits required)

COURSES.	CREDITS
ACCTG 210, 220 Fundamentals of Accounting (3,3)	6
QMETH 200 Computer Programming	2
BG&S 101 Business: An Introductory Analysis	5
BG&S 200 Introduction to Law	5
ECON 200 Introduction to Economics	5
ECON 201 Introduction to Microeconomic Theory	5
MKTG 301 Marketing Concepts	4
B CMU 301 Basic Written Business Communications (4)	
A ORG 460 Human Relations in Organizations (4)	4
*B ECN 301 Money, National Income, and Prices (4) or	
*MKTG 381 Retailing (4) or	
BG&S 361 Business History (3)	3 or 4
EDC&I 314 Business Education Clinic	3-15
EDC&I 315 The Teaching of Business Education: Typewriting, Shorthand, Transcription	2
EDC&I 316 The Teaching of Business Education: Bookkeeping and General Business	2

*May be deferred until fifth year.

Business Education Major: Elementary School Emphasis

(37 approved credits required)

BG&S 101	Business: An Introductory Analysis	5
ECON 200	Introduction to Economics	5
BG&S 200	Introduction to Law	5
QMETH 200	Computer Programming	2
ACCTG 210, 220	Fundamentals of Accounting (3,3)	6
ECON 201	Introduction to Microeconomic Theory (5) or	
A ORG 460	Human Relations in Organizations (4)	4 or 5
B CMU 301	Basic Written Business Communications	4
EDC&I 314	Business Education Clinic	3-15

Teaching Minor: Secondary School Emphasis

(35 approved credits required)

BG&S 101	Business: An Introductory Analysis	5
ECON 200	Introduction to Economics	5
BG&S 200	Introduction to Law	5
ACCTG 210, 220	Fundamentals of Accounting (3,3)	6
B CMU 301	Basic Written Business Communications	4
Approved elective	in business or economics	3
EDC&I 314	Business Education Clinic	15
EDC&I 315	The Teaching of Business Education: Typewriting, Shorthand, Transcription	2
EDC&I 316	The Teaching of Business Education: Bookkeeping and General Business	2

Chemistry**Teaching Major: Secondary School Emphasis**

(55 approved credits required. A grade of C or better must be obtained in each required chemistry course or approved equivalent.)

COURSES	CREDITS
CHEM 140, 150, 151, 160 General Chemistry and Laboratory (4,4,2,4)	14
CHEM 170 Qualitative Analysis	3
CHEM 221 Quantitative Analysis	5
CHEM 231, 232, 241, 242 Organic Chemistry and Laboratory (3,3,2,2)	10
CHEM 350, 351 Elementary Physical Chemistry (3,3)	6
PHYS 114, 115, 116, 117, 118, 119 General Physics and Laboratory (4,4,4,1,1,1) or approved equivalent	15
MATH 124 Calculus with Analytic Geometry	5

Chemistry Major: Elementary School Emphasis

(55 approved credits required. A grade of C or better must be obtained in each required chemistry course or approved equivalent.)

CHEM 140, 150, 151, 160	General Chemistry and Laboratory (4,4,2,4)	14
CHEM 170	Qualitative Analysis	3
CHEM 221	Quantitative Analysis	5
CHEM 231, 232, 241, 242	Organic Chemistry and Laboratory (3,3,2,2)	10
CHEM 350, 351	Elementary Physical Chemistry (3,3)	6
PHYS 114, 115, 116, 117, 118, 119	General Physics and Laboratory (4,4,4,1,1,1) or approved equivalent	15
MATH 124	Calculus with Analytic Geometry	5

Teaching Minor: Secondary School Emphasis

(37 approved credits required. A grade of C or better must be obtained in each required chemistry course or approved equivalent.)

CHEM 140, 150, 151, 160	General Chemistry (3,3,2,3)	11
CHEM 170	Qualitative Analysis	3
CHEM 221	Quantitative Analysis	5
*CHEM 231, 232, 241	Organic Chemistry and Laboratory (3,3,2)	8
PHYS 110, 111, 112	General Physics (3,3,4) or approved equivalent	10

*CHEM 350 may be substituted for CHEM 232 and CHEM 351 may be substituted for CHEM 241.

Chinese**Teaching Minor: Secondary School Emphasis**

(37 approved credits required plus a proficiency in oral and written Chinese and training in teaching methods of Chinese. Proficiency in the language must be demonstrated by examination.)

COURSES	CREDITS
CHINESE 300 Advanced Chinese Conversation (1-3, max. 9) . . .	6
CHINESE 315 Selections of Modern Essays	5
CHINESE 316 Selections of Modern Short Stories	5
CHINESE 400 Tutorial Chinese	5
CHINESE 443 Structure of Chinese	3
CHINESE 499 Undergraduate Research (3-5, max. 15) . . .	5
Methods course in Chinese Language	3
One course chosen from electives listed below	5

Electives for Background in Chinese Studies

EASIA 210 The Far East in the Modern World	5
EASIA 240 Chinese Civilization	5
GEOG 336 Regional Geography of China	5
PHIL 415 Chinese Philosophy	5
GEOG 435 Problems in the Geography of China	5
POL S 442 Government and Politics of China	5
HSTAS 454 History of Modern China	5
ECON 493 Economy of Modern China	5

See Institute for Comparative and Foreign Area Studies (formerly Far Eastern and Russian Institute).

Comparative Literature

Teaching Major: Secondary Education Emphasis
(45-55 approved credits required)

COURSES	CREDITS
C LIT 300 World Classics of Western Europe	5
C LIT 301 World Classics of Germany, Russia, and Scandinavia	5
C LIT 302 World Classics of the Orient	5
CLAS 210 Greek and Roman Classics in English (5) or Any upper-division course in Latin or Greek literature . . .	3-5
At least one course in a literature other than English, studied in the original language	3-5
EDC&I 356 The Teaching of English (3) or EDC&I 331 or 332 The Teaching of French (3) or EDC&I 336 The Teaching of German in Secondary Schools (3) or	
EDC&I 338 The Teaching of Russian (2) or EDC&I 334 or 335 The Teaching of Spanish (3,3) or EDC&I 339 The Teaching of Scandinavian (2)	2 or 3
Approved electives in upper-division literature courses, chosen from either comparative literature and English (and American) literature or comparative literature and a foreign literature. At least 12 of these elective credits shall be in other than comparative literature	22-27

Teaching Major: Elementary Education Emphasis
(45-55 approved credits required)

C LIT 300 World Classics of Western Europe	5
C LIT 301 World Classics of Germany, Russia, and Scandinavia	5
C LIT 302 World Classics of the Orient	5
CLAS 210 Greek and Roman Classics in English (5) or Any upper-division course in Latin or Greek literature (3) . . .	3 or 5
LIBR 451 Children's Literature I (3) or LIBR 453 Literature for Young People (3)	3
At least one course in a literature other than English, studied in the original language	3-5
EDC&I 330 The Teaching of French (3) or EDC&I 336 The Teaching of German in Secondary Schools (3) or	
EDC&I 338 The Teaching of Russian (2) or EDC&I 333 The Teaching of Spanish: Secondary Emphasis (3) or	
EDC&I 339 The Teaching of Scandinavian (2)	2 or 3
Approved electives in upper-division literature courses, chosen from either comparative literature and English (and American) literature or comparative literature and a foreign literature. At least 12 of these elective credits shall be in other than comparative literature	19-24

Teaching Minor: Secondary Education Emphasis
(32-40 approved credits required)

C LIT 300 World Classics of Western Europe	5
C LIT 301 World Classics of Germany, Russia, and Scandinavia	5
C LIT 302 World Classics of the Orient	5
CLAS 210 Greek and Roman Classics in English (5) or Any upper-division course in Latin or Greek Literature (3) . . .	3 or 5
At least one course in a literature other than English, studied in the original language	3-5
EDC&I 356 The Teaching of English (3) or EDC&I 331 or 332 The Teaching of French (3,3) or EDC&I 336 The Teaching of German in Secondary Schools (3) or	
EDC&I 338 The Teaching of Russian (2) or EDC&I 334 or 335 The Teaching of Spanish (3,3) or EDC&I 339 The Teaching of Scandinavian (2)	2 or 3
Approved electives in upper-division literature courses, chosen from either comparative literature and English (and American) literature or comparative literature and a foreign literature. At least 6 of these elective credits shall be in other than comparative literature	12-27

Drama

***Combined Teaching Major and Minor: Secondary School Emphasis**
(70 approved credits required)

COURSES	CREDITS
DRAMA 101 Introduction to the Theatre	5
DRAMA 102, 103 Play Analysis (3,3)	6
DRAMA 210, 211, 212 Theatre Technical Practice (2 or 4 each) to total	12
DRAMA 460 Introduction to Directing	3
DRAMA 251, 252, 253 Acting (4,4,4) or	
DRAMA 146 Theatre Voice and Speech (3) and	
DRAMA 151, 152, 153 Acting (3,3,3) to total	12
DRAMA 316 Theatrical Make-up	2
DRAMA 275, 276, 277 Development of Dramatic Art (3,3,3) . . .	9
DRAMA 375, 376, 377 History of the Western Theatre (3,3,3) . .	9

FIFTH YEAR

Drama Electives or approved cognates 12

* Satisfaction of the Combined Teaching Major and Minor also satisfies the minor area degree requirements within the College of Education.

RECOMMENDED DRAMA COGNATE COURSES

CLAS 427 Greek and Roman Tragedy in English (3)	
C LIT 301 World Classics of Germany, Russia, and Scandinavia (5)	
ENGL 259 Introduction to Modern Drama (5)	
ENGL 322 Medieval and Renaissance English Drama Exclusive of Shakespeare (5)	
ENGL 335 Restoration Literature: 1660-1700 (5)	
ENGL 410 Types of Dramatic Literature: Comedy (5)	
ENGL 411 Types of Dramatic Literature: Tragedy (5)	
ENGL 513 Shakespeare's Dramatic Contemporaries (5)	
ENGL 517, 518, 519 Shakespeare (5,5,5)	
HUM 103 The Arts of Africa, The Caribbean, and Black America	5
JAPAN 423 Modern Japanese Literature in English (5)	
MUSIC 420, 421 Opera 1600-1750, Opera 1750-1850 (3,3)	
RUSS 422 Russian Plays in English (5)	
SCAND 480 Ibsen and His Major Plays in English (2 or 2½)	
SCAND 481 Strindberg and His Major Plays in English (2 or 2½)	
SCAND 482 Lagerkrist and His Contemporaries in English (2)	
SPAN 420 Spanish Literature of the Eighteenth Century (3)	

Drama Major: Elementary School Emphasis
(46 approved credits required)

DRAMA 151 Acting (3) and	
DRAMA 146 Theatre Voice and Speech (3) and	
DRAMA 152 Acting (3)	9
or	
DRAMA 251, 252 Acting (4,4)	8



DRAMA 230	Introduction to Children's Drama	2
DRAMA 316	Theatrical Make-up	2
DRAMA 325	Play Production	5
or		
DRAMA 210, 211, 212	Theatre Technical Practice (2 or 4 each)	12
DRAMA 331	Puppetry	3
DRAMA 336	Drama in the Elementary School	3
DRAMA 338	Creative Dramatics	3
DRAMA 436	Drama in the Elementary School	3
DRAMA 438	Creative Dramatics and Laboratory	3

Variable credits in drama electives and cognate courses with approval of drama adviser will complete the total required credits.

RECOMMENDED DRAMA ELECTIVES

DRAMA 101	Introduction to the Theatre (5)
DRAMA 432	Advanced Puppetry (2, max. 4)
DRAMA 435	Children's Theatre (3)
DRAMA 437	Laboratory in Teaching Drama to Children (1)
DRAMA 460	Introduction to Directing (3)

Teaching Minor: Secondary School Emphasis (28 approved credits required)

DRAMA 101	Introduction to the Theatre	5
DRAMA 146	Theatre Voice and Speech	3
DRAMA 151, 152	Acting (3,3)	6
DRAMA 230	Introduction to Children's Drama	2
DRAMA 316	Theatrical Make-up	2
DRAMA 325, 326	Play Production (5,5)	10

Earth Science

Teaching Major: Secondary School Emphasis

Five programs leading to a major in Earth Science are offered. Each provides some course work in the four earth science areas (geology, oceanography, astronomy, and atmospheric sciences) and additional work in depth in one of these fields or in natural science. A minimum of 60 credits, exclusive of courses taken to satisfy a minor field, is required for each program. Students who satisfy some of the major requirements by electing a related minor should take additional electives in mathematics or science to bring the total to 60 credits.

Geological Sciences Emphasis (administered by Department of Geological Sciences)

(60 approved credits required)

COURSES	CREDITS
GEOL 201	Introduction to Field Geology 5 (Registration for Summer Quarter, taken in September)
GEOL 311	Surface Processes and Environments 3
GEOL 320	Mineralogy 5
GEOL 321	Rocks and Their Origins 4
GEOL 341	The Earth's Interior 3
GEOL 361	Surface Deposits and Fossils 5
CHEM 140, 150, 151, 160	General Chemistry and Laboratory 14
PHYS 114, 115, 116, 117, 118, 119, or 121, 122, 123, 131, 132, 133	General Physics and Laboratory 15
ATM S 101	Survey of the Atmosphere (5) or
ATM S 201	Introduction to the Atmosphere (3) 3 or 5
ASTR 101	Astronomy (5) or
ASTR 301	Astronomy for Scientists and Engineers (3) 3 or 5
OCEAN 101	Survey of Oceanography (5) or
OCEAN 203	Introduction to Oceanography (5) 5

Oceanography Emphasis (administered by Department of Oceanography)

(60 approved credits required)

OCEAN 401, 402	General Physical Oceanography I, II	10
OCEAN 403	General Biological Oceanography	5
OCEAN 406	Introduction to Geological Oceanography	5
OCEAN 421	Chemical Oceanography	3
MATH 124, 125, 126	Calculus with Analytic Geometry	15
CHEM 140, 150, 151, 160	General Chemistry and Laboratory	14
PHYS 121, 122, 123, 131, 132, 133	General Physics and Laboratory	15
ASTR 101	Astronomy (5) or	
ASTR 301	Astronomy for Scientists and Engineers (3) . . . . .	.3 or 5
ATM S 101	Survey of the Atmosphere (5) or	
ATM S 201	Introduction to the Atmosphere (3) . . . . .	.3 or 5
GEOL 101	Physical Geology (5) or	
GEOL 205	Introduction to Geological Sciences (5)	5

Astronomy Emphasis (administered by Department of Astronomy) (60 approved credits required)

ASTR	Courses approved by adviser	15
MATH 124, 125, 126	Calculus with Analytic Geometry	15
PHYS 114, 115, 116, 117, 118, 119 or 121, 122, 123, 131, 132, 133	General Physics and Laboratory	15
ATM S 101	Survey of the Atmosphere (5) or	
ATM S 201	Introduction to the Atmosphere (3)	3 or 5
GEOL 101	Physical Geology (5) or	
GEOL 205	Introduction to Geological Sciences (5)	5
OCEAN 101	Survey of Oceanography (5) or	
OCEAN 203	Introduction to Oceanography (5)	5

Atmospheric Sciences Emphasis (administered by Department of Atmospheric Sciences)

(60 approved credits required)

ATM S 101	Survey of the Atmosphere (5) or
ATM S 201	Introduction to the Atmosphere (3) 3 or 5
ATM S 321	Physical Climatology 5
ATM S 322	Regional Climatology 5
ATM S 351	Atmospheric Observations and Analysis 5
PHYS 114, 115, 116, 117, 118, 119, or 121, 122, 123, 131, 132, 133	General Physics and Laboratory 15
ASTR 101	Astronomy (5) or
ASTR 301	Astronomy for Scientists and Engineers (3) 3 or 5
GEOL 101	Physical Geology (5) or
GEOL 205	Introduction to Geological Sciences (5) 5
OCEAN 101	Survey of Oceanography (5) or
OCEAN 203	Introduction to Oceanography 5
Electives in astronomy, atmospheric sciences, chemistry, geological sciences, mathematics, or oceanography 10-14	

General Emphasis (administered by College of Education)

(60 approved credits required)

ASTR 101	Astronomy (5) or
ASTR 301	Astronomy for Scientists and Engineers (3) 3 or 5
ATM S 101	Survey of the Atmosphere (5) or
ATM S 201	Introduction to the Atmosphere (3) 3 or 5
GEOL 101	Physical Geology (5) or
GEOL 205	Introduction to Geological Sciences (5) 5
GEOL 103	Earth History 5
OCEAN 101	Survey of Oceanography (5) or
OCEAN 203	Introduction to Oceanography (5) 5
Elective in one of above departments 5	
BIOL 101-102	General Biology (5-5) or
BIOL 210, 211, 212	Introductory Biology (5,5,5) or equivalent 10-15
PHYS 114, 115, 116, 117, 118, 119 or 121, 122, 123, 131, 132, 133	General Physics and Laboratory 15
CHEM 101, 102 or 140, 150, 151, 160	General and Organic Chemistry and Laboratory 10-14

Teaching Minor: Secondary School Emphasis (administered by Department of Geological Sciences)

(25 approved credits required)

This program is available only to students taking a Teaching Major in a science field.

Courses in each of the Earth Science departments (Astronomy, Atmospheric Sciences, Geological Sciences, and Oceanography) 25

Economics

Teaching Major: Secondary School Emphasis
(57-60 approved credits required)

COURSES	CREDITS
ECON 200 Introduction to Economics	5
ECON 201 Introduction to Microeconomic Theory	5
ECON 300 Intermediate Price Theory	5
ECON 301 National Income Analysis	5
ECON 281 Introduction to Economic Statistics	5
Four electives in economics chosen from a minimum of three fields of specialization other than theory	20
MATH 157 Elements of Calculus (4) or	
MATH 124 Calculus with Analytic Geometry (5)	4 or 5
Two courses to be chosen from MATH 125, 126, 305, PHIL 120, 370, 470, ACCTG 210, and other economic courses	8-10

Economics Major: Elementary School Emphasis
(44-45 approved credits required)

ECON 200 Introduction to Economics	5
ECON 201 Introduction to Microeconomic Theory	5
ECON 281 Introduction to Economic Statistics	5
ECON 300 Intermediate Price Theory	5
ECON 301 National Income Analysis	5
Three electives in economics chosen from a minimum of two different fields of specialization	15
MATH 157 Elements of Calculus (4) or	
MATH 124 Calculus with Analytic Geometry (5)	4 or 5

Teaching Minor: Secondary School Emphasis
(35 approved credits required)

COURSES	CREDITS
ECON 200 Introduction to Economics	5
ECON 201 Introduction to Microeconomic Theory	5
ECON 300 Intermediate Price Theory	5
ECON 301 National Income Analysis	5
Three electives in economics chosen from a minimum of two different fields of specialization, or	
ECON 281 Introduction to Economic Statistics (5) and two electives in economics chosen from two fields of specialization	15

English

Teaching Major: Secondary School Emphasis
(59 approved credits required)

COURSES	CREDITS
ENGL 257 Introduction to Poetry	5
ENGL 264 English Masterpieces: Beginnings Through Shakespeare (to 1600)	5
ENGL 265 English Masterpieces: Donne Through Blake (1600-1800)	5
ENGL 271 Expository Writing; plus 3 additional credits in advanced writing	6
ENGL 324 Shakespeare	5
ENGL 341 Romantic Poets (Blake, Wordsworth, Coleridge) (5) or	
ENGL 342 Romantic Poets (Byron, Shelley, Keats) (5) or	
ENGL 344 Victorian Poets (Browning, Tennyson, and Others) (5) or	
ENGL 347 Nineteenth-Century Probes (5)	5
ENGL 361 American Literature: Beginnings to 1800 (5) or	
ENGL 362 American Literature: 1800-1865 (5) or	
ENGL 363 American Literature: 1865-1914 (5)	5
ENGL 387 English Grammar (5) or	
ENGL 447 History of English Language (5)	5
ENGL 417 or 418 or 419 The English Novel (5,5,5)	5
ENGL 430 English Literature: 1900-1930 (5) or	
ENGL 431 English Literature: Since 1930 (5) or	
ENGL 434 American Literature: 1914-1945 (5) or	
ENG 435 American Literature: Since 1945 (5)	5
SPCH 140 Oral Interpretation of Literature	5
EDC&I 356 The Teaching of English	3

English Major: Elementary School Emphasis
(45 approved credits required)

ENGL 257 Introduction to Poetry	5
ENGL 264 English Masterpieces: Beginnings Through Shakespeare (to 1600)	5
ENGL 265 English Masterpieces: Donne Through Blake (1600-1800)	5
ENGL 267 American Masterpieces: Beginnings to 1900	5
ENGL 271 Advanced Expository Writing	3
ENGL 324 Shakespeare	5
ENGL 387 English Grammar (5) or	
ENGL 447 History of the English Language (5)	5
ENGL 341 Romantic Poets (Blake, Wordsworth, Coleridge) (5) or	
ENGL 342 Romantic Poets (Byron, Shelley, Keats) (5) or	
ENGL 344 Victorian Poets (Tennyson, Browning, and Others) (5) or	
ENGL 347 Nineteenth-Century Prose (5) or	
ENGL 417 or 418 or 419 The English Novel (5,5,5)	5
ENGL 430 English Literature: 1900-1930 (5) or	
ENGL 431 English Literature: Since 1930 (5) or	
ENGL 434 American Literature: 1914-1945 (5) or	
ENGL 435 American Literature: Since 1945 (5)	5
Approved electives	2 or more

Teaching Minor: Secondary School Emphasis
(41 approved credits required)

ENGL 265 English Masterpieces: Donne Through Blake (1600-1800)	5
ENGL 266 English Masterpieces: Wordsworth Through Hardy (1800-1900)	5
ENGL 267 American Masterpieces: Beginnings to 1900	5
ENGL 271 Advanced Expository Writing	3
ENGL 324 Shakespeare	5
ENGL 387 English Grammar	5
ENGL 430 English Literature: 1900-1930 (5) or	
ENGL 431 English Literature: Since 1930 (5) or	
ENGL 434 American Literature: 1914-1945 (5) or	
ENGL 435 American Literature: Since 1945 (5)	5
SPCH 140 Oral Interpretation of Literature	5
EDC&I 356 The Teaching of English	3

French (Romance Languages and Literature)

Teaching Major: Secondary School Emphasis

(51 approved credits required beyond French 222, and a proficiency in oral and written French, knowledge of French literature and culture, and training in the application of modern principles, materials, and methods of foreign language teaching. Satisfaction of the requirements is to be certified by the adviser in the Department of Romance Languages and Literature before the student begins teaching practicum (EDUC 403 or 404). The program of study, supervised by the departmental adviser, should normally include the following courses).

COURSES	CREDITS
FREN 409 Advanced Phonetics	3
FREN 410 Survey of French Literature: 1500-1700	3
FREN 411 Survey of French Literature: 1700-1850	3
FREN 412 Survey of French Literature: 1850 to the Present	3
French Literature Courses at 350 level	9
Approved electives in French language, literature, and/or civilization courses numbered above 400	9*
ROM 401 Introduction to Romance Linguistics (3) or	
FREN 403 Background of Modern French (3)	3
EDC&I 330 or 331 or 332 The Teaching of French (3,3,3)	3

*The 9 credits on the 400 level may not be transfer credits or courses in translation. French literature courses must account for 6 of these credits.



Credit may be arranged for study abroad, preferably during the junior year, subject to the regulations governing transfer credit and provided the student's plan is approved in advance by the departments in which he is studying.

Teaching Minor: Secondary School Emphasis

(42 approved credits required beyond French 222. Requirements are the same as for the Teaching Major: Secondary School Emphasis, with one exception—electives in French language, literature, and/or civilization courses numbered above 400 are not required.)

Teaching Major: Elementary School Emphasis

(Requirements are the same as for the Teaching Minor: Secondary School Emphasis.)

Geography

Teaching Major: Secondary School Emphasis
(50 approved credits required)

COURSES	CREDITS
GEOG 100 Introduction to Geography	5
GEOG 205 Man's Physical Environment	5
GEOG 207 Economic Geography	5
GEOG 258 Maps and Map Reading	2
GEOG 277 Geography of Cities	5
GEOG 302 The Pacific Northwest	3
GEOG 402 United States	5
Approved geography upper-division electives courses	20

The following are highly recommended courses:

GEOG 200 Introduction to Human Geography	5
GEOG 304 Western Europe	5
GEOG 313 East Asia	5
GEOG 350 Urban and Regional Analysis	3
GEOG 370 Conservation of Natural Resources	5
GEOG 442 Social Geography (3 or 5)	5

Geography Major: Elementary School Emphasis
(45 approved credits required)

GEOG 100 Introduction to Geography	5
GEOG 205 Man's Physical Environment	5
GEOG 207 Economic Geography	5
GEOG 258 Maps and Map Reading	2
GEOG 277 Geography of Cities	5
GEOG 302 The Pacific Northwest	3
GEOG 313 East Asia	5
Approved geography upper-division elective courses	15

The following are highly recommended courses:

GEOG 200 Introduction to Human Geography	5
GEOG 304 Western Europe	5
GEOG 370 Conservation of Natural Resources	5
GEOG 402 United States	5

Teaching Minor: Secondary School Emphasis
(25 approved credits required)

GEOG 100 Introduction to Geography	5
GEOG 205 Man's Physical Environment	5
GEOG 207 Economic Geography	5
Approved geography upper-division elective courses	10

Geological Sciences

Teaching Major: Elementary School Emphasis

(See Earth Science; Geological Sciences emphasis)

Teaching Major: Elementary School Emphasis

(54 approved credits required. 10 credits of electives may be taken during the student's fifth year.)

COURSES	CREDITS
CHEM 140, 150, 151, 160 General Chemistry and Laboratory (4,4,2,4)	14
BIOL 101-102 General Biology (5)	10
GEOG 101 Physical Geology (5) or	
GEOG 205 Introduction to Geological Sciences (5)	5
GEOG 103 Earth History (5) or	
GEOG 361 Surface Deposits and Fossils (5)	5
GEOG 320 Mineralogy	5
GEOG 430 General Paleontology	5
Approved upper-division geological sciences electives or approved courses in related fields	10

Teaching Minor: Secondary School Emphasis
(23 approved credits required)

GEOG 101 Physical Geology (5) or	
GEOG 205 Introduction to Geological Sciences (5)	5
GEOG 106 Geology in World Affairs (5) or	
GEOG 320 Mineralogy (5)	5
GEOG 103 Earth History (5) or	
GEOG 361 Surface Deposits and Fossils (5)	5
GEOG 311 Surface Processes and Environments	3
GEOG 308 Geology of the Northwest	5
GEOG 101 Physical Geology (5) or	
GEOG 205 Introduction to Geological Sciences (5)	5
GEOG 106 Geology in World Affairs (5) or	
GEOG 320 Mineralogy (5)	5
GEOG 103 Earth History (5) or	
GEOG 361 Surface Deposits and Fossils (5)	5
GEOG 311 Surface Processes and Environments	3
GEOG 308 Geology of the Northwest	5

German (Germanic Languages and Literature)

(Grade-point average of 2.50 must be maintained in all German courses in the programs.)

Teaching Major: Secondary School Emphasis

(45 approved credits above the second-year level required)

By taking the following courses, 36 credits must be acquired; the rest of the required 45 credits may be chosen from other upper-division courses offered by the Department.

COURSES	CREDITS
GERM 301, 302, 303 Grammar and Conversation (3,3,3)	9
GERM 310 Introduction to Twentieth-Century Literature	3
GERM 311 Introduction to German Novelle	3
GERM 312 Introduction to Goethe	3
GERM 401, 402, 403 Grammar and Composition (3,3,3)	9
GERM 405 Linguistic Analysis of German	3
GERM 413 or 414 Survey of Older German Literature and Culture (3,3)	3
EDC&I 336 The Teaching of German in Secondary Schools	3

German Major: Elementary School Emphasis

(24 approved credits above the second-year level required)

GERM 301, 302, 303 Grammar and Conversation (3,3,3)	9
GERM 310 Introduction to Twentieth-Century Literature	3
GERM 311 Introduction to the German Novelle	3
GERM 312 Introduction to Goethe	3
GERM 405 Linguistic Analysis of German	3
EDC&I 337 Teaching of German in Elementary Schools	3

Teaching Minor: Secondary School Emphasis

(30 approved credits above the second-year level required)

GERM 301, 302, 303	Grammar and Conversation (3,3,3)	9
GERM 310	Introduction to Twentieth-Century Literature	3
GERM 311	Introduction to the German Novelle	3
GERM 312	Introduction to Goethe	3
GERM 401, 402, 403	Grammar and Composition (3,3,3)	9
EDC&I 337	The Teaching of German in Elementary Schools	3

Health Education

(School of Physical and Health Education)

Teaching Major: Secondary School Emphasis

(40 approved credits in core and area courses and 22-25 credits in foundation courses required)

CORE REQUIREMENTS

H ED 250	Contemporary Health Concepts	2
H ED 292	First Aid (or current advanced ARC certificate)	0-2
H ED 350	Foundations of Health Behavior	2
H ED 351	School Health Programs	3
H ED 352	Health Implications of the School Environment	3
H ED 353	Theory and Practice of Health Education	3

AREA REQUIREMENTS

GROUP A—one of the following courses:

H EC 300	Nutrition (2)	
H EC 409	Food and People (3)	2 or 3

GROUP B—one of the following courses:

PC EH 411	Introduction to Environmental Health (3)	
PC EP 420	Principles of Epidemiology (3)	
PC HS 323	Introduction to Public Health, Principles and Practices (3)	
PC HS 424	Public Health Programs (3)	3

GROUP C—one of the following courses:

EDPSY 408	Mental Hygiene for Teachers and Administrators (3)	
PSYC 267	Preventive Methods for Mental Health (2)	
PSYC 451	Principles of Personality Development (2)	
PSYCH 305	Deviant Personality (5)	2-5

GROUP D—two of the following courses:

H ED 481	Human Sexuality and Education (3)	
H EC 356	Family Relationships (3)	
PSYCH 250	Racism and Minority Groups (4)	
PSYCH 260	Psychological Aspects of Poverty (3)	
PSYCH 403	Motivation (5)	
SOC 240	Introduction to Social Psychology (5)	
SOC 330	Human Ecology (5)	
SOC 331	Population Analysis (5)	
SOC 352	The Family (5)	
SOC 362	Race Relations (5)	
SOC 365	Urban Community (5)	
SOC 452	Health and Social Behavior (5)	
SOC 453	Social Factors in the Family (3)	
SPCH 472	Speech-Communication and Interpersonal Influence (5)	6-10

Approved electives in Health Education or related fields . . . 4-14

FOUNDATION REQUIREMENTS

B STR 301	General Anatomy	4
MICRO 101	The Microbial World (5) or	
MICRO 301	General Microbiology (5)	5
PSYCH 100	General Psychology	5
SOC 110	Survey of Sociology	5
ZOOL 118	Survey of Physiology (5) and	
ZOOL 119	Elementary Physiology Laboratory (1) or	
ZOOL 208	Elementary Human Physiology (5)	5 or 6

Teaching Major: Elementary School Emphasis

(45 approved credits required, requirements for the

Elementary School Emphasis are established with the guidance of a Health Education adviser)

Teaching Minor: Secondary School Emphasis

(25-30 approved credits in core and area courses and 15 credits in foundation courses required)

CORE REQUIREMENTS

(Requirements are the same as those for the Teaching Major: Secondary School Emphasis.)

AREA REQUIREMENTS—one course from each of the following groups:

GROUP A

H EC 300	Nutrition (2)	
H EC 409	Food and People (3)	2 or 3

GROUP B

EDPSY 408	Mental Hygiene for Teachers and Administrators (3)	
PSYC 451	Principles of Personality Development (2)	
PSYCH 305	Deviant Personality (5)	2-5

GROUP C

PC HS 323	Introduction to Public Health, Principles and Practices (3)	
PC HS 424	Public Health Programs (3)	3
Approved electives in Health Education or related fields		2-7

FOUNDATION REQUIREMENTS

Human Biology or Human Physiology	5
psych 100 General Psychology	5
soc 110 Survey of Sociology	5

History

Teaching Major: Secondary School Emphasis

(53 approved credits required. Grade-point average of 2.50 is required in the history courses taken at the University of Washington. Approved equivalents may be substituted for the numbered courses below.)

COURSES**CREDITS**

HST 111	The Ancient World (5) or HSTAM 201 or 202 Ancient History (5,5)	5
HST 112	The Medieval World	5
HST 113	The Modern World	5
One 400-level course in Modern European History		3-5
Three upper-division courses in United States History		12-15
HSTAA 432	History of Washington and the Pacific Northwest	5
EDC&I 366	The Teaching of Social Studies in Secondary Schools	3

and additional courses in history sufficient to constitute a major of 50 credits in history, of which at least half comprise upper-division work.

History Major: Elementary School Emphasis

(Requirements are the same as for the History Teaching Major: Secondary School Emphasis, except that EDC&I 366 and the 400-level course in Modern European History are not required.)

Teaching Minor: Secondary School Emphasis

(33 approved credits required. Requirements are similar to those for the History Teaching Major: Secondary School Emphasis, except that HSTAM 201, or 202 are not required.)



Home Economics

*Combined Teaching Major and Minor: Secondary School Emphasis (62 approved credits and 38 credits in prerequisite and supporting courses)

COURSES	CREDITS
H EC 125 Textiles	3
H EC 134 Clothing (3 or 5)	5
H EC 148 The Home, Its Equipment, and Management	3
H EC 307 Nutrition (3 or 5)	5
H EC 314 Foods I	5
H EC 347 Home Furnishing (3 or 5)	5
H EC 348 Home-Management House	3
H EC 354 Family Economics and Finances (3 or 5)	5
H EC 356 Family Relationships	3
Approved Home Economics electives	17
†EDC&I 327 The Teaching of Home Economics	5
PSYCH 320 Field Analysis of the Behavior of Young Children (3) or approved substitute	3

PREREQUISITES

ART 109 Design (3) (Prerequisite for H EC 234 and 347) or	
ART 129 Appreciation of Design (2)	3 or 2
CHEM 101 General Chemistry (prerequisite for CHEM 102)	5
CHEM 102 General and Organic Chemistry (Prerequisite for H EC 216 and 307)	5
ECON 200 Introduction to Economics	5
MICRO 101 The Microbial World (5) or	
MICRO 301 General Microbiology (5)	5
PSYCH 100 General Psychology (prerequisite for PSYCH 306)	5
PSYCH 306 Developmental Psychology (prerequisite for PSYCH 320)	5
ZOOL 118 Survey of Physiology	5

*This is a composite program. The major may not be taken without completion of the minor. Completion of the Combined Teaching Major and Minor satisfies the major and minor degree requirements within the College of Education and these courses plus EDC&I 404 fulfill Home Economics course requirements for a Vocational Certificate.

†2 credits count as Education, and 3 credits count as Home Economics.

Home Economics Major: Elementary School Emphasis (45 approved credits and prerequisite courses)

H EC 314 Foods I	5
H EC 125 Textiles	3
H EC 134 Clothing (3 or 5)	5
H EC 148 The Home, Its Equipment and Management	3
H EC 347 Home Furnishing	3 or 5
*H EC 300 Nutrition (2) or	
*H EC 307 Nutrition (3 or 5)	3 or 5
H EC 354 Family Economics and Finances (3 or 5)	3 or 5
H EC 356 Family Relationships	3
H EC 457 Child Nutrition and Care	3
Approved Home Economics electives	8-17

*Students cannot receive credit for both Home Economics 300 and 307.

PREREQUISITES

ART 109 Design (3) (prerequisite for H EC 347) or	
ART 129 Appreciation of Design (2)	3 or 2
CHEM 101 General Chemistry (prerequisite for CHEM 102)	5
CHEM 102 General and Organic Chemistry (prerequisite for H EC 216 and 307)	5
ECON 200 Introduction to Economics (prerequisite for H EC 354)	5
ZOOL 118 Survey of Physiology (5) or	
ZOOL 208 Elementary Human Physiology (5) (prerequisite for H EC 307 and 457)	5

Teaching Minor: Secondary School Emphasis

(34 approved credits in Home Economics and 22-23 credits in prerequisite courses)

H EC 125 Textiles	3
H EC 134 Clothing (3 or 5)	5
H EC 148 The Home, Its Equipment, and Management	3
H EC 314 Foods I	5
H EC 307 Nutrition (3 or 5)	5
H EC 347 Home Furnishing (3 or 5)	5
H EC 354 Family Economics and Finances (3 or 5)	5
H EC 356 Family Relationships	3

PREREQUISITES

ART 109 Design (3) (prerequisite for H EC 347) or	
ART 129 Appreciation of Design (2)	3 or 2
CHEM 101 General Chemistry (prerequisite for CHEM 102)	5
CHEM 102 General and Organic Chemistry (prerequisite for H EC 216 and 307)	5
ECON 200 Introduction to Economics (prerequisite for H EC 354)	5
ZOOL 118 Survey of Physiology (5) or	
ZOOL 208 Elementary Human Physiology (5) (prerequisite for H EC 307)	5

Industrial Education

Teaching Major: Secondary School Emphasis

(54 approved credits required)

COURSES	CREDITS
EDC&I 200, 201 Industrial Education: Sketching and Technical Drawing (3,3)	6
EDC&I 202 Industrial Education: General Shop	5
EDC&I 204 Industrial Education: Fundamentals of Woodwork	3
EDC&I 206 Industrial Education: General Metalwork	3
EDC&I 307 Industrial Education: Tools and Materials	2
EDC&I 304-305 Industrial Education: Woodworking Technology (3-2)	5
EDC&I 300 Industrial Education: Home Planning	4
EDC&I 400 Selection and Organization of Occupational and Industrial Education Subject Matter	3
ME 201 Metal Casting	1
ME 202 Welding	1
ME 203 Metal Machining	1
ME 312 Machine Tool Fundamentals	3
Approved electives	17

ALSO REQUIRED

EDC&I 401 The Teaching of Occupational and Industrial Education	3
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Industrial Education Major: Elementary School Emphasis

(36 approved credits required)

EDC&I 200 Industrial Education: Sketching and Technical Drawing	3
EDC&I 202 Industrial Education: General Shop	5
EDC&I 204 Industrial Education: Fundamentals of Woodwork	3
EDC&I 206 Industrial Education: General Metalwork	3
EDC&I 304-305 Industrial Education: Woodworking Technology (3-2)	5
EDC&I 302 Industrial Education for Elementary Teachers	5
Approved electives	12

Teaching Minor: Secondary School Emphasis

(35 approved credits required)

EDC&I 200, 201 Industrial Education: Sketching and Technical Drawing	6
EDC&I 202 Industrial Education: General Shop	5
EDC&I 204 Industrial Education: Fundamentals of Woodwork	3
EDC&I 206 Industrial Education: General Metalwork	3
EDC&I 400 Selection and Organization of Occupational and Industrial Education Subject Matter	3

EDC&I 401	The Teaching of Occupational and Industrial Education	3
ME 201	Metal Casting	1
ME 202	Welding	1
ME 203	Metal Machining	1
ME 312	Machine Tool Fundamentals	3
Approved electives		6

Institute For Comparative and Foreign Area Studies

Teaching Major: Secondary School Emphasis
(60 approved credits required)

EASIA 210	The Far East in the Modern World	5
POL S 435	Japanese Government and Politics (5) or	
HSTAS 423	History of Modern Japan (5)	5
REEU 243	Russian Civilization (5) or	
HSTEU 445	Twentieth-Century Russia (5)	5
EASIA 240	Chinese Civilization (5) or	
EASIA 443	Chinese Social Institutions (5) or	
HSTAS 454	History of Modern China (5)	5
POL S 343	Government and Politics of Southeast Asia	
CHIN 362	Modern Chinese Literature in English (5) or	
JAPAN 421	Japanese Literary Tradition in English (5) or	
JAPAN 423	Modern Japanese Literature in English (5)	5
RUSS 320	Russian Literature in English (5) or	
RUSS 421	Contemporary Russian Literature in English (5)	5
GEOG 313	East Asia (5)	5
GEOG 333	Geographic Patterns of Soviet Development	5
ANTH 403	Traditional Chinese Society (5) or	
POL S 414	Chinese Political Thought (5)	5
POL S 429	International Relations in the Far East (5) or	
POL S 432	American Foreign Policy in the Far East (5)	5
POL S 420	Foreign Relations of the Soviet Union (5) or	
POL S 441	Political Institutions of the Soviet Union (5)	5

Major: Elementary School Emphasis

(60 approved credits required; the same as for the
Teaching Major: Secondary School Emphasis.)

Teaching Minor: Secondary School Emphasis
(30 approved credits required)

EASIA 210	The Far East in the Modern World	5
EASIA 240	Chinese Civilization (5) or	
GEOG 313	East Asia (5) or	
GEOG 333	Geographic Patterns of Soviet Development (5) or	
ANTH 403	Traditional Chinese Society (5) or	
POL S 435	Japanese Government and Politics (5) or	
POL S 414	Chinese Political Thought (5)	
	to total	10
REEU 243	Russian Civilization (5) or	
HSTEU 445	Twentieth-Century Russia (5)	5
EASIA 240	Chinese Civilization (5) or	
HSTAS 454	History of Modern China (5) or	
POL S 343	Government and Politics of Southeast Asia (5) or	
HSTAS 423	History of Modern Japan (5)	5
POL S 432	American Foreign Policy in the Far East (5) or	
POL S 420	Foreign Relations of the Soviet Union (5) or	
POL S 441	Political Institutions of the Soviet Union (5)	5

With permission of the Institute undergraduate advisers, other applicable foreign area courses offered by the Institute may be substituted for those listed above. In addition to required Institute and Education courses, majors are encouraged to complete placement related courses such as American History and Government, 15 credits; or European and World History, 15 credits; or Geography 100, 5 credits.

Japanese (Asian Languages and Literature)

Teaching Minor: Secondary School Emphasis

(38 approved credits, including the courses listed below, and a proficiency in oral and written Japanese and training in teaching methods of Japanese are required. Proficiency in the language must be demonstrated by examination.)

COURSES	CREDITS
JAPAN 311, 312, 313 Third-year Japanese (5,5,5) or	
JAPAN 331 Intensive Japanese (15)	15
JAPAN 411, 412, 413 Fourth-year Japanese (5,5,5)	15
One course chosen from electives for background in Japanese studies (see list of electives below)	5

ELECTIVES FOR BACKGROUND IN JAPANESE STUDIES

EASIA 210	The Far East in the Modern World	5
GEOG 437	Problems in the Geography of Japan	3 or 5
POL S 435	Japanese Government and Politics	5
HSTAS 423	History of Modern Japan	5
JAPAN 421	Japanese Literary Tradition in English	5

Journalism

Teaching Major: Secondary School Emphasis

(45–50 approved credits required. All elective courses must be approved by the curriculum adviser of the School of Communications.)

COURSES		CREDITS
CMU 150	The Mass Media	5
CMU 200	The Communication Process	5
CMU 320	Legal Aspects of Communications	5
CMU 321	News Writing	4
CMU 322	Reporting Contemporary Affairs (4) or	
CMU 323	Reporting Urban Affairs (4)	4
CMU 324	Critical Writing for the Mass Media	4
CMU 406	Social Control and the Mass Media	5
CMU 480	Public Opinion and Propaganda	5
EDC&I 358	The Teaching of Journalism	3

ELECTIVE COURSES

CMU 291	Photography (3)	
CMU 314	The Role of the Magazine in America (3)	
CMU 325	Copy Editing (4)	
CMU 353	Radio and Television News Writing (3)	
CMU 400	Communication Theory (3)	
CMU 402	Government and Mass Communication (3)	
CMU 411	Mass Communications Research (5)	
CMU 414	History and Communications (5)	
CMU 443	The Social Functions of Advertising (3)	
CMU 450	Broadcast Programming (3)	
CMU 474	The Educational Role of the Mass Media (2½)	
CMU 485	Comparative Communication Systems (5)	
SOC 443	Mass Communication (5)	
To Total		9–12

Journalism Major: Elementary School Emphasis

(The requirements are the same as those for the Teaching Major: Secondary School Emphasis.)

Teaching Minor: Secondary School Emphasis
(27 approved credits required)

COURSES		CREDITS
CMU 150	The Mass Media	5
CMU 200	The Communication Process	5
CMU 321	News Writing	4
EDC&I 358	The Teaching of Journalism	3

ELECTIVE COURSES

CMU 406	Social Control and the Mass Media (5)	
CMU 414	History and Communications (5)	
CMU 443	The Social Functions of Advertising (3)	
CMU 450	Broadcast Programming (3)	
CMU 474	The Educational Role of the Mass Media (2½)	
CMU 480	Public Opinion and Propaganda (5)	
CMU 485	Comparative Communications Systems (5)	
To Total		10

Latin (Classics)

Teaching Major: Secondary School Emphasis

(36 approved credits required: 27 credits in upper-



division Latin courses, and 9 credits chosen with the approval of the Department of Classics from courses in Greek, upper-division Latin, classical archeology, classics in English, ancient history, and the history of ancient philosophy.)

Latin Major: Elementary School Emphasis
(Requirements are the same as those for the Teaching Major: Secondary School Emphasis.)

Teaching Minor: Secondary School Emphasis
(18 approved credits required in recommended upper-division Latin courses.)

Librarianship

Teaching Minor: Secondary School Emphasis
(24 approved credits required)

COURSES	CREDITS
LIBR 440 Libraries and Society	3
LIBR 441 Basic Library Materials	3
LIBR 442 Book Selection	3
LIBR 443 Organization of Library Materials: Theory and Practice	3
LIBR 451 Children's Literature I	3
LIBR 453 Literature for Young People	3
LIBR 454 Library in the School	3
EDC&I 480 Introduction to Learning Resources in Teaching	3

Elementary and secondary school librarians must have preparation according to *Programs for the Learning Resources Center; Standards for Integrating School Library and Media Services*, approved by the State Board of Education.

	ELEMENTARY	SECONDARY
Minimum	18 credits	24 credits
Good	24 credits	36 credits
Excellent	Master's Degree	Master's Degree

Every applicant for a school library position must hold a teaching certificate for the appropriate level and meet the recommended standards of the State Board of Education.

Courses listed above meet:

(1) Recommendations for elementary, junior, and senior high school librarians in compliance with the *Standards of 1968*, and/or

(2) Requirements for the Librarianship Teaching Minor: Secondary School Emphasis, undergraduate teacher preparation.

A permission signature must be obtained in Room 133, Suzzallo Library.

Mathematics

Teaching Major: Secondary School Emphasis
(45 approved credits required beyond Elementary Functions. Grades of C or higher and a grade-point

average of at least 2.00 must be obtained in all mathematics courses.)

MATH 114 Elementary Computer Programming	2
MATH 124, 125, 126 Calculus with Analytic Geometry (5,5,5)	15
MATH 205 Elementary Linear Algebra (3) or 302 Linear Algebra (4)	3 or 4
MATH 327 Advanced Calculus	3
MATH 391 Elementary Probability	3
MATH 392 Elements of Statistics	3
MATH 411, 412 Introduction to Modern Algebra for Teachers (3,3)	6
MATH 444, 445 Foundations of Geometry (3,3)	6
Approved mathematical electives	3 or 4

EDC&I 377 The Teaching of Secondary School Mathematics (3) is recommended for all Mathematics Teaching Majors. EDC&I 378 is prerequisite to EDUC 403 or 404.

Mathematics Major: Elementary School Emphasis
(36 approved credits required beyond Elementary Functions. Grades of C or higher and a grade-point average of at least 2.00 must be obtained in all mathematics courses.)

MATH 124, 125, 126 Calculus With Analytic Geometry (5,5,5)	15
MATH 170 Theory of Arithmetic (3) or MATH 301 Elementary Number Theory (3)	3
MATH 171 Theory of Arithmetic (3) or MATH 305 Introduction to Mathematical Logic (3) or MATH 391 Elementary Probability (3)	3
MATH 205 Elementary Linear Algebra	3
MATH 411, 412 Introduction to Modern Algebra For Teachers (3,3)	6
MATH 444, 445 Foundations of Geometry (3,3)	6

Teaching Minor: Secondary School Emphasis
(30 approved credits required beyond Elementary Functions. Grades of C or higher and a grade-point average of at least 2.00 must be obtained in all mathematics courses.)

MATH 124, 125, 126 Calculus with Analytic Geometry (5,5,5)	15
MATH 205 Elementary Linear Algebra	3
MATH 411, 412 Introduction to Modern Algebra for Teachers (3,3)	6
MATH 444, 445 Foundations of Geometry (3,3)	6

EDC&I 377 The Teaching of Secondary School Mathematics (3) is recommended for all Mathematics Teaching Minors.

Music

(A grade-point average of 2.50 must be obtained in all music courses.)

Combined Teaching Major and Minor: Music Specialist
(96-97 approved credits are required)

COURSES	CREDITS
MUSIC 110, 111, 112 First-Year Theory (3,3,3)	9
MUSIC 113, 114, 115 Ear Training (1,1,1)	3
MUSIC 210, 211, 212 Second-Year Theory (3,3,3)	9
MUSIC 213, 214, 215 Music After 1750 (3,3,3)	9
MUSIC 313, 314 Music Before 1750 (3,3)	6
MUSIC 340 Music in General Education. Prerequisites, Educ 302 (Music Section) and Admission to the Teacher Education Program	3

A. INSTRUMENTAL AND CHORAL PERFORMANCE EMPHASIS

MUSIC 310 OR 311 OR 490	Modal Counterpoint (3), Tonal Counterpoint (2), or Orchestration (3)	2 or 3
MUSIC 280, 380, 381, 382	Conducting (1,1,1,1)	4
MUSIC 442 OR 443	Instrumental Curriculum, Methods and Materials (3) or Choral Curriculum, Methods and Materials (3)	3
MUSIC 432, 440, 441, 442, OR 443	One approved elective from other curriculum in music (3,3,3,3,3)	3
Major Instrument or Voice (21-24)	{ To total	33
Minor Instruments or Voice (9-12)		
Music Ensembles (minimum of one year choral ensemble required)		12

B. SECONDARY GENERAL MUSIC EMPHASIS

B. Secondary General Music Electives		
MUSIC 316 OR 317 OR 318	Music Cultures of the World (5,5,5)	5
MUSIC 432, AND 440 OR 441 OR 442 OR 443	The General Music Class (3) and one approved elective from other curriculum in music (3,3,3,3,3)	6
MUSIC 280, 380	Conducting (1,1)	2
Major Instrument or Voice (15-24)	{ To total	33
Minor Instruments or Voice (9-18)		
Note: The combined number of credits in major and minor instruments or voice must total 33, and must include the equivalent of Music 236 (piano), 237 (voice), 232 (percussion), 240 (guitar), and 241 (recorder).		
Music Ensembles (minimum of one year choral ensemble required)		12

C. ELEMENTARY GENERAL MUSIC EMPHASIS

C. ELEMENTARY GENERAL MUSIC EMPHASIS		
MUSIC 316 OR 317 OR 318	Music Cultures of the World (5,5,5)	5
MUSIC 440 OR 441	Music in Early Childhood (3) and	
	441 Music in Later Childhood (3)	6
MUSIC 280, 380	Conducting (1,1)	2
Major Instrument or Voice (15-24)	} To total	33
Minor Instruments or Voice (9-18)		
Note: The combined number of credits in major and minor instruments or voice must total 33, and must include the equivalent of Music 236 (piano), 237 (voice), 232 (percussion), 240 (guitar), and 241 (recorder).		
Music Ensembles (minimum of one year choral ensemble required)		12

Music Major: General Elementary Teaching Emphasis (50 approved credits required)

MUSIC 110, 111, 112	First-Year Theory (3,3,3)	9
MUSIC 113, 114, 115	Ear Training (1,1,1)	3
MUSIC 213, 214, 215	Music After 1750 (3,3,3)	9
MUSIC 330	Music in the United States	2
EDC&I 343 OR 346	Music in the Elementary School, Intermediate Grades (3) or Music in Pre-school and Primary Grade Classrooms (3)	3
Applied Music (Include not less than 3 credits in voice, and 3 credits in piano)		18
Music Ensembles		6

Natural Sciences

Teaching Major: Elementary School Emphasis

(60-72 approved credits required.) The natural sciences major for elementary school emphasis students is offered jointly by the departments of Botany, Chemistry, Geological Sciences, Physics, and Zoology. Approval of the major may be obtained by the student from any one of the departments listed above. The department giving original authorization shall be the major department until the approved program is completed.)

PHYSICAL SCIENCES

Chemistry COURSES		CREDITS
CHEM 101	General Chemistry	5

CHEM 102	General and Organic Chemistry	5
CHEM 140, 150, 160	General Chemistry (4,4,4) and	12
CHEM 151	General Chemistry Laboratory	2
CHEM 170	Qualitative Analysis	3

Physics

PHYS 101-102, 103	Physics for Teachers (5-5,5) or	
PHYS 114, 115, 116	General Physics (4,4,4) and	12-15
PHYS 117, 118, 119	General Physics Laboratory (1,1,1)	3
PHYS 121, 122, 123	Mechanics (4) Electromagnetism and Oscillatory Motion (4), Waves (4) and	12
PHYS 131, 132, 133	General Physics Laboratory (1,1,1)	3
*PHYS 110, 111, 112	General Physics (5,5,5)	15

BIOLOGICAL SCIENCES

BIOL 101-102	General Biology (5-5)	10
BOT 220	The Plant Kingdom	5
ZOOL 118	Survey of Physiology (5) or	
ZOOL 208	Elementary Human Physiology (5) or	
BOT 371	Elementary Plant Physiology (5)	5
BIOL 210, 211, 212	Introductory Biology (5,5,5)	15
BOT 371	Elementary Plant Physiology (5) or	
ZOOL 330	Natural History of Marine Invertebrates (5) or	
ZOOL 362	Natural History of Vertebrates (5)	5

EARTH SCIENCES

ASTR 101	Astronomy	5
ATM S 101	Survey of the Atmosphere	5
GEOL 101	Physical Geology	5
OCEAN 101	Survey of Oceanography	5

* Student must secure written permission from either the Physics Department or the College of Education before enrollment.

Norwegian (Scandinavian Languages and Literature) (A grade-point average of 2.50 must be maintained.)

Teaching Major: Elementary School Emphasis (36 approved credits required)

COURSES	CREDITS
NORW 220, 221, 222 Introduction to Norwegian Literature (3,3,3)	9
NORW 223, 224, 225 Norwegian Conversation and Composition (2,2,2)	6
NORW 300, 301, 302 Modern Norwegian Literature (3,3,3) or	
NORW 350, 351, 352 The Norwegian Short Story (3), Norwegian Romanticism (3), New Norwegian Writers (3)	9
NORW 303, 304, 305 Advanced Norwegian Conversation and Composition (2,2,2)	6
NORW 490 Supervised Reading	1
SCAND 455 Introduction to Scandinavian Linguistics (3) or	
NORW 450 History of Norwegian Literature (3)	3
EDC&I 339 The Teaching of Scandinavian	2

Teaching Minor: Secondary School Emphasis (42 approved credits required)

NORW 220, 221, 222	Introduction to Norwegian Literature (3,3,3)	9
NORW 223, 224, 225	Norwegian Conversation and Composition (2,2,2)	6
NORW 300, 301, 302	Modern Norwegian Literature (3,3,3) or	
NORW 350, 351, 352	The Norwegian Short Story (3), Norwegian Romanticism (3), New Norwegian Writers (3)	9
NORW 303, 304, 305	Advanced Norwegian Conversation and Composition (2,2,2)	6
NORW 450	History of Norwegian Literature	3
NORW 490	Supervised Reading	4
SCAND 455	Introduction to Scandinavian Linguistics	3
EDC&I 339	The Teaching of Scandinavian	2



Physical Education

Teaching Major: Secondary School Emphasis

(55 approved credits in core and specialization courses and 19-22 credits in related field prerequisites required. In addition, the student is required to demonstrate proficiency through the advanced level in at least two other approved physical education activities commonly taught in schools, and through the intermediate level in at least eight other such courses. Satisfaction of activity proficiencies must be certified by an adviser in the School of Physical and Health Education before the student begins teaching practicum, EDUC 403 or 404.)

HUMAN MOVEMENT CORE COURSES

COURSES	CREDITS
PE 250 Introduction to Movement Analysis	4
PE 325 Growth and Motor Development	3
PE 331, 332, 333 Human Kineoenergetics (3,3,3)	9
PE 350 Learning and Movement Performance	5
PE 410 Social Correlates of Movement Forms and Patterns	3

SPECIALIZATION COURSES

PE 290 OR 304 Officiating	2
PE 365 Applied Movement Learning	4
PE 366 Practicum (1, max. 3)	2
PE 450 The School Physical Education Program	3
PE 455 Measurement and Evaluation in Physical Education	4
PE 460 Perspectives in Physical Education	3
Approved courses related to the specialization	13

RELATED FIELDS COURSES

B STR 301 General Anatomy	4
H ED 292 First Aid (or current advanced ARC certificate)	0-2
PSYCH 100 General Psychology	5
SOC 110 Survey of Sociology	5
ZOOL 118 Survey of Physiology (5) and	
ZOOL 119 Elementary Physiology Laboratory (2) or	
ZOOL 208 Elementary Human Physiology (5)	6-5

Teaching Minor: Secondary School Emphasis

(38-40 approved credits in core and specialization courses and 19-22 credits in related field prerequisites required. The student must demonstrate competency in physical education activities as described for the Teaching Major: Secondary School Emphasis.)

HUMAN MOVEMENT CORE COURSES

(Requirements are the same as those for the Teaching Major: Secondary School Emphasis.)

SPECIALIZATION COURSES

PE 290 OR 304 Officiating	2
PE 365 Applied Movement Learning	4
PE 366 Practicum (1, max. 3)	2
PE 450 The School Physical Education Program	3
PE 460 Perspectives in Physical Education	3

RELATED FIELDS COURSES

(Requirements are the same as those for the Teaching Major: Secondary School Emphasis.)

Teaching Major: Elementary School Emphasis

(55 approved credits in core and specialization courses and 19-22 credits in related field prerequisites required. Student must demonstrate competency in physical education activities as described for the Teaching Major: Secondary School Emphasis.)

HUMAN MOVEMENT CORE COURSES

(Requirements are the same as those for the Teaching Major: Secondary School Emphasis.)

SPECIALIZATION COURSES

PE 314 Movement Exploration for Children	3
PE 316 Structure of Movement Activities for Children	3
PE 365 Applied Movement Learning	4
PE 366 Practicum (1, max. 3)	1
PE 455 Measurement and Evaluation in Physical Education	2
PE 478 Programs in Elementary Physical Education	2½
PEDNC 310 Traditional Dance Forms	2½
PEDNC 311 Rhythmic Activities for Small Children	2
Approved Courses Related to the Specialization	9

RELATED FIELD COURSES

(Requirements are the same as those for the Teaching Major: Secondary School Emphasis.)

Physics

Teaching Major: Secondary School Emphasis

(64 approved credits required)

COURSES CREDITS

MATH 124, 125, 126 Calculus With Analytical Geometry (5,5,5) or	
MATH 134H, 135H, 136H Calculus With Analytical Geometry (5,5,5)	15
PHYS 121 Mechanics	4
PHYS 122 Electromagnetism and Oscillatory Motion	4
PHYS 123 Waves	4
PHYS 131, 132, 133 General Physics Laboratory (1,1,1)	3
PHYS 221 Quantum Physics	3
PHYS 222 Statistical Physics	3
PHYS 231, 232 Electric Circuits Laboratory (3,3)	6
PHYS 407-408 Physics for Teachers (5-5)	10
Electives in Mathematics (such as Mathematics 327), Physics, or other Natural Sciences (such as suitable sequences in Chemistry, Biology, or Earth Sciences)	12

Students should consult an adviser in the Department of Physics concerning elective choices.

Teaching Minor: Secondary School Emphasis

(46 approved credits required)

MATH 124, 125, 126 Calculus With Analytical Geometry (5,5,5) or	
MATH 134H, 135H, 136H Calculus With Analytical Geometry (5,5,5)	15
PHYS 121 Mechanics	4
PHYS 122 Electromagnetism and Oscillatory Motion	4
PHYS 123 Waves	4
PHYS 131, 132, 133 General Physics Laboratory (1,1,1)	3
PHYS 221 Quantum Physics	3
PHYS 222 Statistical Physics	3
PHYS 407-408 Physics for Teachers (5-5)	10

Note: Students who have completed the sequence Physics 114, 115, 116, 117, 118, 119 and who wish to earn a Teaching Minor in Physics should consult an adviser in the Department of Physics.

Political Science

Teaching Major: Secondary School Emphasis

(50 approved credits required)

COURSES CREDITS

POL S 101 Introduction to Politics	5
POL S 102 American Government and Politics	5

*Broad Fields:

- (1) Political Theory and Public Law (minimum 10 credits)
- (2) Government, Politics, and Public Administration (minimum 10 credits)
- (3) Comparative Government and International Relations (minimum 10 credits)

A useful course for teachers in the state of Washington is

POL s 351 The American Democracy (5)

The Department strongly recommends that a student who intends to teach in senior high school elect a minor in history in addition to his major in political science; and that a student who intends to teach in junior high school elect a minor in geography and take History of the Americas HSTAA 201, in addition to his major in credits in the Department.)

Political Science Major: Elementary School Emphasis
(Requirements are the same as those for the Teaching Major: Secondary School Emphasis.)

Teaching Minor: Secondary School Emphasis
(30 approved credits required)

POL s 101 Introduction to Politics 5
POL s 102 American Government and Politics 5

*Broad Fields:

(1) Political Theory and Public Law to total 5
(2) Government, Politics, and Public Administration to total 5
(3) Comparative Government and International Relations to total 5
Approved upper-division political science electives 5

*The Department of Political Science maintains a current list of approved courses for the three broad fields.

Psychology

Teaching Major: Secondary School Emphasis
(50 approved credits in psychology and a grade-point average of 2.00 required. Transfer students must meet the same requirements but need to take only 15 credits in the Department.)

COURSES	CREDITS
PSYCH 100 General Psychology (5) or	
PSYCH 101 Psychology as a Social Science (5) or	
PSYCH 102 Psychology as a Natural Science (5) or approved equivalent	5
PSYCH 201 Laboratory in Human Performance (5) or	
PSYCH 202 Laboratory in Animal Learning (5) or	
PSYCH 203 Laboratory in Animal Behavior (5)	5
PSYCH 211 Introduction to the Logic of Behavioral Science Experimentation I (3) or	
PSYCH 302 Statistical Methods I (3)	3
PSYCH 212 Introduction to the Logic of Behavioral Science Experimentation II (3) or	
PSYCH 314 Statistical Inference in Psychological Research (3) .	3
Electives	34

Psychology Major: Elementary School Emphasis
(Requirements are the same as those for the Teaching Major: Secondary School Emphasis.)

Teaching Minor: Secondary School Emphasis
(30 approved credits in psychology and a grade-point average of 2.00 required. Transfer students must meet the same requirements but need to take only 15 credits in the Department.)

PSYCH 100 General Psychology (5) or	
PSYCH 101 Psychology as a Social Science (5) or	
PSYCH 102 Psychology as a Natural Science (5)	5
PSYCH 201 Laboratory in Human Performance (5) or	
PSYCH 202 Laboratory in Animal Learning (5) or	

PSYCH 203 Laboratory in Animal Behavior (5)	5
PSYCH 211 Introduction to the Logic of Behavioral Science Experimentation I (3) or	
PSYCH 302 Statistical Methods I (3)	3
PSYCH 212 Introduction to the Logic of Behavioral Science Experimentation II (3) or	
PSYCH 314 Statistical Inference in Psychological Research (3) .	3
Electives	14

Russian (Slavic Languages and Literature)

Teaching Major: Secondary School Emphasis
(52 approved credits required)

COURSES	CREDITS
RUSS 210 Accelerated Russian (10) or	
RUSS 202, 203 Second-year Russian (5,5)	10
RUSS 301, 302, 303 Intermediate Russian (5,5,5)	15
RUSS 401, 402, 403 Advanced Russian (5,5,5)	15
EDCAI 338 The Teaching of Russian	2
Courses chosen from electives listed below minimum of . . .	10

ELECTIVES FOR BACKGROUND IN RUSSIAN STUDIES

GEOG 333 Geographic Patterns of Soviet Development (5)	
HSTEU 438 Kievan and Muscovite Russia, 850-1700 (5)	
HSTEU 443 Imperial Russia, 1700-1900 (5)	
HSTEU 444 Twentieth-century Russia (5)	
HSTEU 445 Modern Russian Intellectual History (5)	
LING 400 Survey of Linguistic Method and Theory (3)	
POL s 441 Political Institutions of the Soviet Union (5)	
RUSS 320 Russian Literature in English (5)	
RUSS 421 Contemporary Russian Literature in English (5)	
RUSS 422 Russian Plays in English (5)	
RUSS 426, 427, 428 The Russian Novel in English (5,5,5)	
RUSS 451, 452, 453 Structure of Russian (3,3,3)	
RUSS 461, 462, 463 Introduction to Russian Literature (3,3,3)	

Teaching Major: Elementary School Emphasis
(Requirements are the same as for the Teaching Minor: Secondary School Emphasis.)

Teaching Minor: Secondary School Emphasis
(33 approved credits required)

RUSS 210 Accelerated Russian (10) or	
RUSS 202, 203 Second-year Russian (5,5)	10
RUSS 301, 302, 303 Intermediate Russian (5,5,5)	15
EDCAI 338 The Teaching of Russian	2
Courses chosen from electives for background in Russian Studies minimum of	6

Sociology

Teaching Major: Secondary School Emphasis
To be admitted as a major a student must have junior standing (accumulated 90 credits as recorded by the Registrar), and have earned as part of these 90 credits at least 10 *graded* credits in sociology courses, with a grade-point average of at least 2.50 in sociology courses taken previously.

To graduate with a teaching major in sociology, a student must take 50 credits in sociology as stated below, and have a cumulative 2.50 grade-point average in sociology courses taken at the University of Washington.

COURSES	CREDITS
soc 110 Survey of Sociology	5
soc 223 Social Statistics	5
Sociology Electives	40



Sociology Major: Elementary School Emphasis
(Requirements are the same as those for the Teaching Major: Secondary School Emphasis.)

Teaching Minor: Secondary School Emphasis
(30 approved credits in sociology required and a cumulative 2.50 grade-point average in sociology courses taken.)

soc 110 Survey of Sociology (5)	5
Sociology Electives	25

Spanish (Romance Languages and Literature)

Teaching Major: Secondary School Emphasis
(45 approved credits beyond Spanish 203 are required. Prerequisite for all 300-level courses is Spanish 203 or approved equivalent.)

COURSES	CREDITS
SPAN 301, 302 Advanced Syntax and Composition (4,4) . . .	8
SPAN 303 Spanish Stylistics	4
SPAN 350 Drama (3) or	
SPAN 351 Poetry (3) or	
SPAN 352 Fiction (3) to total	6
SPAN 304 Survey of Spanish Literature, 1140 to 1498 . . .	3
SPAN 305 Survey of Spanish Literature, 1498 to 1681 . . .	3
SPAN 306 Survey of Spanish Literature, 1681 to the Present .	3
EDC&I 333 The Teaching of Spanish, Secondary Emphasis (3)	
or	
EDC&I 334 The Teaching of Spanish, Elementary and Junior	
High Emphasis (3) or	
EDC&I 335 The Teaching of Spanish, Elementary Emphasis	
(3)	3

Students should be advised that EDC&I 333, 334, 335 may be given only during the Autumn Quarter; inquire at the Department advisory office for current information.

SPAN 409 Advanced Phonetics	3
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Four 400-level courses. Three shall be literature courses; the fourth may be literature or one course chosen from the Special Collateral Studies list. Or the 400-level requirement may be satisfied by three courses in literature and Romance 401. Prerequisites for courses on 400 level: completion of *three* of the following: Spanish 304, 305, 306, 350, 351, 352 12

Students are urged to take any one of the Spanish 350, 351, 352 series *before* beginning the Spanish 304, 305, 306 series.

Teaching Minor: Secondary School Emphasis
(36 approved credits beyond Spanish 203 required.) Requirements are the same as for the Teaching Major, Secondary School Emphasis, with the exception that three electives in Spanish literature numbered above 400 may be omitted.

Teaching Major: Elementary School Emphasis
(Requirements are the same as those for the Teaching Minor: Secondary School Emphasis.)

Speech

Teaching Major: Secondary School Emphasis
(59 approved credits required.)

The student should see the department undergraduate adviser immediately for advice relevant to footnotes below. In the fifth year, the student must elect an additional 15 credits in upper-division courses approved by the Department of Speech, including Speech 400, The-

oretical Backgrounds in Speech (3), if the course has not already been taken.

Students who transfer to a major in Speech, after entering the University, must present a cumulative grade-point average of 2.50 in all University courses, unless otherwise authorized by the Department. Students majoring in speech are required to maintain a grade-point average of 2.50 in all speech courses.

COURSES

CREDITS

SPCH 102 Speech, Man, and Society (5) and	
SPCH 100 Voice and Articulation Improvement (3) or	
SPCH 203 Principles of Oral Communication (3) or	
SPCH 103 Basic Principles of Oral Communication (5)	
(only 3 credits applicable to major require-	
ments	5-8*
SPCH 140 Oral Interpretation	5
SPCH 220 Introduction to Public Speaking	5
SPCH 230 Essentials of Argument	5
SPCH 300 Speech Science	5
SPCH 348 Survey of Communication Disorders (3)	
EDC&I 357 The Teaching of Speech (3) and	
EDUC 404 Practicum in Classroom Teaching and	
Management: Secondary School (5)	8
SPCH 373 Principles of Group Discussion	5
SPCH 270 Introduction to Speech-Communication Science .	5
Approved Electives—including 6 credits at 400 level . .	10-18†

Teacher candidates with a major in Speech Education normally will be advised to elect English as their minor. Other recommended minors include drama, social studies, or a modern foreign language.

Speech Education Minor (33 credits required.)

SPCH 102 Speech, Man, and Society (5) and	
SPCH 100 Voice and Articulation Improvement (3) or	
SPCH 203 Principles of Oral Communication (3) or	
SPCH 103 Basic Principles of Oral Communication (5)	
(only 3 credits applicable to minor require-	
ments	5-8*
SPCH 356 Speech in the Secondary Classroom (3) or	
EDC&I 357 The Teaching of Speech (3) and	
EDUC 404 Practicum in Classroom Teaching and	
Management: Secondary School (5)	3-8
SPCH 373 Principles of Group Discussion	5
SPCH 270 Introduction to Speech-Communication Science .	5
Approved Electives—including 6 credits at 400 level . .	7-15†

*Speech 102 (5 credits) will meet the requirement contingent upon evidence of a good background of speech courses and/or activities in high school or college; without this, 8 credits or more may be recommended to provide speaking experiences.

†Electives include (a) a possible emphasis area such as *Debate and Public Speaking*—Speech 235 (3), 335 (3), 339 (3), 457 (2½), and 400 (3), or *Oral Interpretation and Drama* 240 (3), 345 (3), 349 (2), 444 (3); Drama 325 and 326, Play Production (5,5).

(b) EDC&I 356, The Teaching of English (3) is recommended.

Speech Major: Elementary School Emphasis (Early Childhood to Middle School)

(48 approved credits required plus evidence of 5 actual hours of experience developing children's speech communication [may be accomplished through course work in or out of department].)

SPCH 102 Speech, Man, and Society (5) and	
SPCH 103 Basic Principles of Oral Communication (5) or	
SPCH 100 Voice and Articulation Improvement (3) or	
SPCH 203 Basic Principles of Oral Communication (5)	
(only 3 credits applicable to major require-	
ment)	5-8*
SPCH 140 Oral Interpretation	5

SPCH 348	Survey of Communication Disorders	3
SPCH 355	Speech in the Elementary Classroom	3
SPCH 373	Principles of Group Discussion	5
SPCH 300	Speech Science	5
SPCH 303	Speech and Language Development	3

Approved Electives—including 6 credits at 400 level . . . 16-19
(Electives may include speech courses plus Drama 338, Creative Dramatics (3); Librarianship 452, Storytelling (3); Psychology 457, Language Development (3); and other appropriate English, Education, or Drama courses.)

*Speech 102 (5 credits) will meet the requirement contingent upon evidence of a good background of speech courses and/or activities in high school or college; without this, 8 credits or more may be recommended to provide speaking experiences.

The following two majors may be substituted for the present "Speech and Hearing Therapy Major: Elementary School Emphasis."

reprofessional Major: Elementary

(45 approved credits required)

Intended for students planning to qualify for a regular Provisional Certificate who have an interest in communication disorders, or for those who plan later to meet requirements for the professional major.

SPCH 250	Introduction to Communication Disorders	3
SPCH 301	Anatomy of the Speech Mechanism	5
SPCH 302	General Phonetics	4
SPCH 303	Speech and Language Development	3
SPCH 304	Physical Dimensions of Speech	2
SPCH 306	Introduction to Audiology	5
SPCH 330	Disorders of Articulation	3
SPCH 331	Language Disorders of Children	3
SPCH 332	Diagnosis of Speech Disorders	3
SPCH 390	Introduction to Aural Rehabilitation	5
SPCH 414	Articulatory Phonetics	3
SPCH 430	Stuttering	3
SPCH 454	Voice Disorders	3

Communication Disorders Professional Major: Elementary School Emphasis

(78-81 approved credits required, including specified post-baccalaureate courses.)

Intended for students who plan to become Communication Disorders Specialists in the schools. The Elementary School Communication Disorders Minor should be elected. Core courses for this major are the same as those for the Communication Disorders Preprofessional Major: Elementary School Emphasis, but include additional required courses and completion of either Track I or Track II. Students must complete the entire sequence before they can be recommended for a Provisional Certificate. Courses taken at the postbaccalaureate level that normally carry graduate credit may be applied to a master's degree if the student has been admitted to Graduate School. Those electing this major are required to complete 18 credits in Teaching Practicum. (EDUC 402, Professional Education Sequence) limited to clinical experience in the schools.)

Courses required for Communication Disorders Preprofessional

Major		45
SPCH 350	Methods of Clinical Management	3
SPCH 371	Basic Audiometry	3

SPCH 351	Practicum in Speech Pathology (1-2, max. 15) and	
SPCH 391	Practicum in Audiology (1-2, max. 15) minimum of 2 credits in either	5
	(Completion of one of the two following tracks)	20-23

Track I: Speech Pathology Emphasis

SPCH 450	Treatment of Stuttering (3)	
SPCH 536	Advanced Diagnostic Procedures in Speech Pathology (4)	
SPCH 552	Clinical Management of Stuttering (3)	
SPCH 530, 531, 532	Organic Disorders of Speech (3,3,3)	
	One elective from Track II (2-5)	

Track II: Audiology Emphasis

SPCH 415	Acoustic Phonetics (3)	
SPCH 477	Pediatric Audiology (3)	
SPCH 493	Acoustic Amplification (3)	
SPCH 494	Hearing Conservation for Children (2)	
SPCH 570	Advanced Audiology (5)	
SPCH 596	Advanced Aural Rehabilitation	5

Swedish (Scandinavian Languages and Literature)

Teaching Major: Elementary School Emphasis

(35 approved credits and a grade-point average of 2.50 are required)

COURSES	CREDITS
SWED 220, 221, 222 Introduction to Swedish Literature (3,3,3)	9
SWED 223, 224, 225 Swedish Conversation and Composition (2,2,2)	6
SWED 300, 301, 302 Modern Swedish Literature (3,3,3) or	
SWED 350 Contemporary Swedish Literature (3) and	
SWED 351 Swedish Romanticism (3) and	
SWED 352 Strindberg and His Works (3)	9
SWED 303, 304, 305 Advanced Conversational Swedish (2,2,2)	6
SWED 306, 307, 308 Advanced Swedish Composition (1,1,1)	3
SWED 450 History of Swedish Literature	3
EDC&I 339 The Teaching of Scandinavian	2

Teaching Minor: Secondary School Emphasis

(42 approved credits and a grade-point average of 2.50 are required)

SWED 220, 221, 222 Introduction to Swedish Literature (3,3,3)	9
SWED 223, 224, 225 Swedish Conversation and Composition (2,2,2)	6
SWED 300, 301, 302 Modern Swedish Literature (3,3,3) or	
SWED 350 Contemporary Swedish Literature (3) and	
SWED 351 Swedish Romanticism (3) and	
SWED 352 Strindberg and His Works (3)	9
SWED 303, 304, 305 Advanced Conversational Swedish (2,2,2)	6
SWED 306, 307, 308 Advanced Swedish Composition (1,1,1)	3
SWED 450 History of Swedish Literature	3
SWED 490 Supervised Reading	7
EDC&I 339 The Teaching of Scandinavian	2

THE STANDARD CERTIFICATE

Admission to the College of Education or to any of the programs within the College of Education assumes and is dependent upon the student's eligibility for admission, enrollment, and registration at the University of Washington.

The Standard Certificate is issued by the State Department of Public Instruction upon recommendation from an approved institution of higher learning in the state of Washington. The requirements of the College of Education, University of Washington, combined with



the requirements of the State Board of Education for the Standard Certificate are as follows:

Basic Provisions, General

(1) Possession of a valid Provisional Certificate; (2) at least two years of successful teaching on the Provisional Certificate or equivalent, at the elementary and/or secondary level(s); (3) completion of 45 quarter credits of approved course work beyond the Provisional Certificate requirement including completion of deferred courses from the Provisional Certificate pattern and any appropriate suggestions from the field. Such work must represent study in both professional and academic fields.

**Specific Requirements, University of Washington
College of Education**

Elementary Emphasis (Early childhood education [prekindergarten and primary grades]); general elementary, primary, and intermediate grades; middle school; and elementary school communication disorders.

Students shall complete or have completed 15 credits beyond minimum degree requirements in the College of Education in the two basic fields of knowledge outside the major (humanities, social sciences, natural sciences).

SECONDARY EMPHASIS

A minimum of 3 credits must be selected from one of the following areas: (a) curriculum development, (b) guidance and counseling, (c) special education.

Specific Requirements, State Board of Education

1. At least 50 per cent of the 45 quarter credits in the fifth year must be upper-division and/or graduate courses.
2. A maximum of 12 quarter credits may be taken by independent study or extension.
3. A minimum of 22½ quarter credits approved by the attesting institution must be completed in *residence* at one institution.
4. A maximum of 30 quarter credits in excess of degree requirements may be taken before or during the first year of teaching.
5. A minimum of 15 quarter credits must be taken after one year of successful teaching experience.
6. A college-level course in Washington State history must be completed by intermediate-grade (grades 4, 5, and 6) and all secondary social studies teachers.
7. An average of C or higher must be attained in all course work required for the fifth year.

Students are reminded that a plan for the Standard Certificate must be filed in the College of Education Advisory Office when the conversion program is started.

All courses completed at another institution are subject to review before acceptance. Prior approval before enrollment is urged.

GRADUATE PROGRAMS

Graduate Program Adviser

Roger G. Olstad
210 Miller Hall

Office of Graduate Studies

210 Miller Hall

Admission to the College of Education or to any of the programs within the College of Education assumes and is dependent upon the student's eligibility for admission, enrollment, and registration at the University of Washington.

The College of Education provides, by means of its graduate programs, for the continuing education of teachers and other specialists in various phases of education, including substantive areas of curriculum and instruction; for the preparation of school and college administrators and counselors; and for the scholarly study of the educational process itself—its history, philosophy, and organization, and the sociological and psychological foundations of its operation. In addition to the "fifth" or postbaccalaureate year required by the state of Washington for the standard teaching credential that may be part of an approved graduate program, certain of the special professional certificates for school personnel that require graduate study may be earned through the College of Education.

Students who intend to work toward advanced degrees must apply for admission to the Graduate School and meet its general requirements together with any major field requirements that may be specified. For example, test scores are required, and some fields require successful experience relative to the program. For further details, students should check with the Graduate Program Adviser, appropriate members of the faculty, or the Office of Graduate Studies, 210 Miller Hall.

GRADUATE DEGREE PROGRAMS

The basic graduate programs offered by the College of Education lead to one of four advanced degrees: Master of Arts, Master of Education, Doctor of Philosophy, or Doctor of Education. Students entering these programs will be governed by requirements as outlined below.

Master of Arts

Requirements for the Master of Arts degree are: completion of an approved program of a minimum of 36 quarter credits (exclusive of prerequisites) that consists of at least 27 quarter credits in courses in a field

of concentration in education, including related course work in and outside of education, and 9 quarter credits in thesis; completion of an acceptable thesis; and a written final examination. The Master of Arts degree is currently offered in several programs of study: Educational Curriculum and Instruction (Language Arts Education, Mathematics Education, Science Education, Social Studies Education); Educational Administration, Higher Education; Educational Policy Studies (History of Education, Philosophy of Education, and Sociology of Education); Special Education; Educational Psychology.

Master of Education (Pattern I)

Requirements for the Master of Education (Pattern I) degree are: completion of an approved program of a minimum of 45 quarter credits (exclusive of prerequisites) that consists of at least 24 quarter credits in a field of concentration in education, at least 12 quarter credits in related courses in and outside of education, and 9 quarter credits in thesis or such special assignment as research seminar or field study; and a final examination. The Master of Education (Pattern I) degree is currently offered in these programs of study: Educational Curriculum and Instruction (Elementary Education, Learning Resources, Reading [jointly with Educational Psychology], Secondary Education, Vocational Education); Educational Administration; Educational Psychology and Psychological Services (Educational Psychology, Reading [jointly with Educational Curriculum and Instruction], Reading Disability [jointly with Special Education], Counseling, Vocational Rehabilitation); Special Education (General Curriculum, Reading Disability [jointly with Educational Psychology], Deaf Education).

Master of Education (Pattern II)

Requirements for the Master of Education (Pattern II) degree are: completion of an approved program of 45 quarter credits (exclusive of prerequisites) consisting of at least 24 quarter credits in a teaching field, at least 12 quarter credits in education, and 9 quarter credits in thesis or such special assignment as research seminar or field study; and a final examination. The Master of Education (Pattern II) degree is currently offered in these programs of study: Educational Curriculum and Instruction (Art Education, Business Education, Industrial Education, Mathematics Education, Music Education, Science Education, Social Studies Education, Environmental Education).

Doctor of Philosophy

Requirements for the Doctor of Philosophy degree are: completion of an approved program of a minimum of 90 quarter credits of graduate work beyond the master's degree (exclusive of prerequisites) that focuses

upon an area of specialization consisting of at least 36 quarter credits in a field of concentration in education and approximately 12 quarter credits in supporting courses in a field other than education; approximately 12 quarter credits in the techniques of scholarly research; 30 quarter credits in dissertation; a General Examination, written and oral; an oral Final Examination after the dissertation has been satisfactorily completed. The Doctor of Philosophy degree is currently offered in these fields: Educational Curriculum and Instruction (Elementary Education, General Curriculum, Language Arts, Learning Resources, Science Education, Secondary Education, Social Studies Education); Educational Administration; Educational Psychology and Psychological Services (Counseling and School Psychology, Learning and Thinking, Measurement and Evaluation); Higher Education; Educational Policy Studies (History of Education, Philosophy of Education); Special Education (Exceptional Children).

Doctor of Education

Requirements for the Doctor of Education degree are: completion of an approved program of a minimum of 96 quarter credits of graduate work beyond the master's degree (exclusive of prerequisites) that focuses upon an area of specialization consisting of at least 24 quarter credits in a field of concentration in education; approximately 20 credits in related courses in and outside of education; approximately 10 credits in an internship or field experience relevant to the area of concentration; approximately 12 quarter credits in the techniques of scholarly research; 30 quarter credits in dissertation; a General Examination, written and oral; and an oral Final Examination after the dissertation has been satisfactorily completed. The Doctor of Education degree is currently offered in these fields: Educational Curriculum and Instruction (Elementary Curriculum, General Curriculum Development, Language Arts Education, Learning Resources, Mathematics Education, Science Education, Secondary Curriculum); Educational Administration; Higher Education; Special Education (Exceptional Children).

ADMINISTRATORS' CREDENTIALS

The revised requirements for administrators' credentials were adopted by the State Board of Education March 24, 1956, and became effective June 1, 1957. All applications are to be made to the State Superintendent of Public Instruction, Olympia, Washington, through the intermediate school district in which the applicant's school is located.



I. Provisional Principal's Credential
(Elementary, Secondary, and General)

A. Applications for the Provisional Principal's Credential may be filed by students with full graduate standing in the Graduate School after one year of successful teaching and prior to completion of requirements, preferably before the applicant has begun study for the credential.

B. A total of 54 quarter credits beyond the bachelor's degree in an approved institution is the required minimum. Of these 54 credits, 24 must be in an approved program, which will make a maximum contribution to the individual's responsibilities as a principal.

C. At least 9 credits of the 54 quarter credits must have been earned *after* completion of the Standard Certificate. These 9 quarter credits shall be in courses in administration, curriculum, and supervision on the elementary and/or secondary level. These 9 credits must be earned in residence at the University of Washington.

D. A total of 12 credits toward the 24 may be transferred from an approved institution. Not more than 6 of the 24 credits may be earned by extension, and no credits earned in independent study may be applied. The combination of transfer and extension work may not exceed 12 credits.

E. Laboratory and internship type experiences shall be a part of the program. These shall take the form of supervised administration experiences in school situations.

F. Proof of three years of successful teaching experience on the appropriate level or levels is one of the requirements for a Provisional Principal's Credential.

G. The credential is dependent upon proof that the applicant possesses the qualities of leadership necessary for school administration and an evaluation of the applicant's success in positions already held.

H. After admission to graduate standing in the Graduate School and admission to the area of Educational Administration, an official program plan must be arranged in consultation with a faculty supervisor in Educational Administration.

I. The Provisional Principal's Credential is valid for not more than four years of administrative experience in elementary schools of six or more teachers or in accredited middle, junior, senior, and four-year or six-year high schools.

II. Standard Principal's Credential
(Elementary, Secondary, and General)

A. Applications for the Standard Principal's Credential may be filed during the applicant's second year of experience as a principal and prior to completion of requirements.

B. After completion of the Provisional Principal's Credential, 12 credits in residence at the University of Washington must be earned for a Standard Principal's Credential. These credits shall be in approved courses in administration, supervision, and curriculum on the elementary and/or secondary level.

C. A master's degree is required for the Standard Principal's Credential. This degree may be completed in the College of Education or in an academic department.

D. Three years of successful teaching experience (two years of which must be as a full-time classroom teacher), and three years of experience as a principal on the appropriate level or levels are requirements for a Standard Principal's Credential.

E. The credential is dependent upon proof that the applicant possesses the qualities of leadership necessary for school administration and an evaluation of the applicant's success in positions already held.

F. An official program plan must be arranged in consultation with a faculty supervisor in Educational Administration.

G. The Standard Principal's Credential is valid as long as the holder's teaching certificate is valid.

III. Provisional Superintendent's Credential

A. Applications for the Provisional Superintendent's Credential may be filed after the applicant has completed preparation for a Standard Principal's Credential and prior to completion of requirements.

B. After completion of the Standard Principal's Credential, 12 credits in residence at the University of Washington must be earned for a Provisional Superintendent's Credential. These credits shall be in approved courses in administration, supervision, and curriculum on the elementary and/or secondary level.

C. A master's or higher degree is required for the Provisional Superintendent's Credential. This degree may be completed in an academic department or in the College of Education.

D. Candidates with experience as principals at one level only are to have laboratory experience at the opposite level. These experiences are to be planned with the candidate, the teacher-education institution, and school administrators.

E. Three years of successful teaching experience (two years of which must be as a full-time classroom teacher), and four years of administrative experience on the appropriate level or levels are requirements for a Provisional Superintendent's Credential.

F. The credential is dependent upon proof that the applicant possesses the qualities of leadership necessary for school administration and an evaluation of the applicant's success in positions already held.

G. An official program plan must be arranged in consultation with a faculty supervisor in Educational Administration.

H. The Provisional Superintendent's Credential is valid for three years of administrative experience.

IV. Standard Superintendent's Credential

A. Applications for the Standard Superintendent's Cre-

dential may be filed by the candidate after one year's service as a superintendent, and prior to completion of requirements.

B. After completion of the Provisional Superintendent's Credential, 12 credits in residence at the University of Washington must be earned for a Standard Superintendent's Credential. These credits shall be in approved courses in the areas of administration, supervision, and curriculum.

C. Three years of successful superintendent's experience are required for a Standard Superintendent's Credential.

D. An official program must be completed by all candidates with a faculty supervisor in Educational Administration.

E. The Standard Superintendent's Credential is valid as long as the holder's teaching certificate is valid.



ENGINEERING

Dean

Charles H. Norris
369 Loew Hall

Associate Deans

W. Ryland Hill
373 Loew Hall

H. Myron Swarm
376 Loew Hall

Vernon B. Hammer
367 Loew Hall

Executive Committee

Charles H. Norris, Chairman, Albert L. Babb, R. J. H. Bollard, D. A. Carlson, Daniel G. Dow, V. B. Hammer, W. Ryland Hill, C. J. Kippenhan, R. W. Moulton, J. I. Mueller, H. Myron Swarm, Myron L. White

Man lives in a technological world. Recognition of this fact accompanied by a growing public conscience has raised many questions about the future of technology and calls for careful study of the opportunities to contribute not only to man's physical wants but also to his less tangible needs. The solution to many of society's problems today can only come from the development by engineers of technological solutions conceived and executed with sensitivity and foresight as to their long-range effects. In this effort the engineer does not work alone. He must cooperate with government and industry, with economists, urban planners and sociologists, with lawyers and statesmen, as well as with scien-

tists and engineering technicians in planning his works and putting them into effect.

The scientist discovers new principles. A qualified scientist usually must have a college education extending past the four-year bachelor's degree to the Doctor of Philosophy.

Engineers use the principles of science and engineering to create things that people need or want. Structures and machinery, chemical processes, communication and transportation systems, and control and disposal of pollutants—these and more are the concern of the engineer. He must be competent to understand and use the methods of science; he must apply ingenuity to devise a product or process that is both useful and economical; and he must strive to maximize the benefits of his works to society. Many of the problems of modern society require those solutions that can only be developed by engineers in government and industry.

An engineer with the bachelor's degree is immediately useful for many technical positions. However, engineers who plan to engage in research, in college teaching, or in creative activities on a high professional level now need graduate study leading to master's and doctoral degrees. Increasingly, the master's degree is coming to be considered as the first truly professional engineering degree.

Assisting the engineer and the scientist is the engineering technician. His work is practical and applied,

requiring approximately two years of post-high-school training in a technical institute or community college. He works closely with the engineer to test and develop models and to put engineering designs into production.

The College of Engineering offers a new flexible engineering curriculum suiting the needs of a wide variety of students either in established departmental programs or in new interdisciplinary studies. A student may enter a major field when he wishes but need not choose one until the third year, thus facilitating transfer from a community college.

The College also has active graduate educational and research programs, both departmental and interdisciplinary, at every level. Not only does the research advance engineering knowledge, but it is an integral part of the educational experience needed to qualify graduates for highly professional careers.

The College of Engineering has been a major unit of the University since 1899, with the first engineering degree awarded in mining engineering in 1900. Progressively, degrees in civil engineering (1901), electrical engineering (1902), mechanical engineering (1906), chemical engineering (1907), aeronautical engineering (1929), and nuclear engineering (1955) were added. Last year, 2,141 undergraduates and 852 graduate students were enrolled in engineering curricula taught by a faculty of about two hundred members.

College Facilities and Services

The teaching and research activities of the College of Engineering occupy fourteen major campus buildings and portions of others. All except the Hydraulics Laboratory are grouped around the Engineering Quadrangle. These buildings, most of them relatively new, contain the office, classroom, and administrative facilities of the College and also house the numerous research and teaching laboratories. A new central Engineering Library serves the College, and together with the nearby Chemistry, Mathematics, and Physics Libraries provide outstanding collections of books, periodicals, technical reports, and patents of interest to engineers. The Research Computer Laboratory of the University is also located within the College of Engineering complex, thus making it particularly convenient for many engineering studies.

Facilities of particular interest include a large wind tunnel, a 100-kilowatt nuclear reactor, a 44-acre antenna site, a microwave laboratory, a large structural testing laboratory, an extensive hydraulics laboratory, and a laboratory for heat transfer studies.

Interdisciplinary Research Facilities

The Aerospace Research Laboratory is the first unit of an interdisciplinary engineering research building that is planned to contain about 110,000 square feet (gross). This laboratory is an interdepartmental and interdisciplinary facility organized by the College of Engineering for the conduct of fundamental research studies oriented toward those engineering problems associated with terrestrial and extraterrestrial environments and with flight systems.

Experimental programs of this laboratory are of interest to the several departments of the College. The laboratory serves as a special facility wherein inquiry in the areas of common interest between faculty and students of different departments of the College is undertaken. It frequently serves to complement areas of research being conducted within the departmental laboratories. The laboratory also offers opportunity for interdisciplinary study in areas of common interest between faculty of the College of Engineering and the faculties in other departments of the University.

Office of Engineering Research

Director

H. Myron Swarm
376 Loew Hall

Assistant Director

Erik W. Jordahn
374 Loew Hall

The Office of Engineering Research performs two main functions:

1. It stimulates, promotes, and coordinates investigations and research in all fields of engineering.
2. It provides opportunities through graduate research assistantships for engineering students to extend their professional educations while pursuing a course of study leading to the master's or doctoral degree.

The functioning of the Office of Engineering Research is guided by an Engineering Research Board, consisting of the director as chairman, the assistant director, and the chairmen of the academic departments. All research is carried on either in the departments of the College or in the interdepartmental laboratories.

The Office offers a number of research assistantships to highly qualified graduate students, who are assigned to the academic departments.

College Publications

Current research findings, as well as listings of sponsored projects, appear in the quarterly journal, *The*



Trend in Engineering, which has a circulation of 4,000, including 150 foreign institutions.

Student Activities

The *Engineering Student Council* is made up of representatives elected from student organizations in the departments of the College. *Tau Beta Pi*, the engineering honorary fraternity, also has a representative on the Council that supervises various student activities.

Students serve with faculty on Engineering Policy Committees that make recommendations concerning teacher evaluation, curriculum revisions, advising, grading systems, and other matters of interest to students and faculty.

Honorary and Professional Societies

All the great professional engineering societies, such as the American Society of Civil Engineers, the Institute of Electrical and Electronic Engineers, and the American Society of Mechanical Engineers, have student chapters on the campus, and every engineering student is encouraged to join the chapter that represents his field of interest. The College also has a student chapter of the Society of Women Engineers.

Honor societies open to engineering students are *Tau Beta Pi* and *Sigma Xi*. Students who have maintained high scholarship and are of commendable character may be elected to membership in *Tau Beta Pi* in their junior or senior year. Election to *Tau Beta Pi* constitutes one of the highest honors an undergraduate engineering student can receive.

Financial Aids

The College offers financial assistance to undergraduates through industrial scholarships and limited loan funds. The *Handbook of Scholarships*, available from the Office of Financial Aids, 170 Schmitz Hall, or the departmental advising offices, lists available scholarships. Qualified graduate students may obtain financial assistance through industrial and governmental fellowships, National Science Foundation, National Aeronautics and Space Administration, and Public Health Service traineeships, research assistantships, or teaching assistantships. Students seeking such aid should apply at the office of their major department.

UNDERGRADUATE PROGRAMS

(Advisers are listed under the individual departments.)

In 1971 the College of Engineering inaugurated new flexible engineering curricula extending the variety of educational experiences available to its students. The new curricula also facilitate transfer from community

colleges and to and from other four-year programs of study.

Admission as Freshmen

Admission to the University as described in the *Undergraduate Education* section establishes that the student is eligible for admission to the College of Engineering. However, a student intending to pursue an engineering career should choose his high school electives to provide the background essential to engineering studies. Elementary functions or Algebra IV, algebra, trigonometry, physics, and chemistry are prerequisites for the first-year courses in Engineering. Those who fail to include these subjects in high school must study equivalent courses at the University in addition to the normal required program. This may extend the time needed for a degree. The College also recommends electing a fourth year of mathematics and senior composition when possible.

Admission with Advanced Standing

A qualified student in good standing at an accredited institution may apply for admission with advanced standing. For further information consult the *Undergraduate Education* section in this catalog.

Mathematics Placement Tests

For information concerning the qualifying mathematics tests in the Pre-College Testing Program, see *Undergraduate Education* section.

Programs of Study

The College of Engineering offers three undergraduate programs leading to Bachelor of Science degrees. These are the Departmental Program, the Nondepartmental Program, and the Nonprofessional Program.

1. The Departmental Program, leading to a Bachelor of Science degree in a designated field of engineering, is for the student who wishes to practice professional engineering in a standard branch of engineering or who may wish to continue to graduate school. The curriculum for this degree carries professional accreditation by The Engineers Council for Professional Development, the principal engineering accrediting agency in the United States. Four-year curricula leading to bachelors' degrees are offered in the departments of Aeronautics and Astronautics, Chemical, Civil, Electrical, and Mechanical Engineering and in the Department of Mining, Metallurgical, and Ceramic Engineering.

2. The Nondepartmental Program, leading to a Bachelor of Science in Engineering (B.S.E.) degree, is for the student who has some well directed, special educa-

tional objectives that a departmental program does not satisfy. This curriculum might be in bioengineering, ocean engineering, nuclear engineering, computer science, or other interdisciplinary or specially approved areas, and could serve as preparation for graduate work in these or allied fields. *See Interdepartmental and Interdisciplinary Programs elsewhere in the College of Engineering section of this catalog.*

3. The Nonprofessional Program, leading to the Bachelor of Science (B.S.) degree, is intended for the student who wishes to have a significant exposure to science and engineering courses. This program provides an excellent basis for studies in business, law, medicine, and technical writing. It is not intended that this program qualify the student to practice professional engineering.

Each of these curricula contains the following requirements:

1. The fulfillment of *basic requirements* in mathematics, natural science, functional techniques, and engineering science.
2. The completion of the *humanities and social sciences* requirements.
3. The completion of an *engineering course of study* appropriate to the particular degree(s) being sought.
4. The completion of *free electives* as necessary to obtain a total of 180–185 credits required for graduation.

In addition to the four-year curricula, the College offers a course of study in industrial engineering for which a second bachelor's degree is awarded at the end of five years; the first four years comprise the standard four-year curriculum of any branch of engineering in which the College grants a bachelor's degree, while the fifth is made up of courses in industrial management and related subjects.

Cooperative Work-Study Program

Coordinator

Erik W. Jordahn
374 Loew Hall

The Cooperative Work-Study Program of the College of Engineering offers the engineering undergraduate student an option to combine practical engineering experience with his studies. Starting with the sophomore year and continuing through the junior year, the selected student alternates six-month periods of work with six-month periods of study. The freshman and senior years do not include work periods. The program requires time equivalent to an additional academic year

to complete, because the alternating periods of work and study require three calendar years to finish the middle academic years of study.

The Cooperative Work-Study Program furnishes practical experience to the student, assists the student financially through remunerative employment, provides insight into the human element in engineering through contacts at work as well as school, and helps the student assess his fitness and desire for actual practice in engineering as a life's work. Experience gained from the program helps its graduates make a smooth transition from school to their professional careers. Cooperating organizations include aerospace firms, electric and electronic equipment manufacturers, power companies, manufacturers of machinery and mechanical equipment, construction and engineering firms, and state and federal agencies.

For the present, enrollment in the Cooperative Work-Study Program is limited to undergraduates in the disciplines of civil, electrical, and mechanical engineering. For further information and a detailed publication on this program, write to the University of Washington College of Engineering, Coordinator of the Cooperative Work-Study Program, 376 Loew Hall, Seattle, Washington 98195.

Graduation Requirements

Students working toward bachelor's degrees in engineering must meet the general requirements of the University and the College as well as the particular course requirements of their major department. College and departmental requirements appear under the following headings.

CONTINUING EDUCATION PROGRAMS

Because of the rapid advances in applied mathematics and in the physical and engineering sciences, it is especially important that practicing engineers who are more than ten to fifteen years out of school continue to update their educations.

A rapid growth of knowledge and accompanying changes in the engineering practices have placed higher and higher demands on the analytical ability and fundamental preparation of the practicing engineer. Some analytical tools that were available only in graduate school a decade or two ago are now required material in the undergraduate engineering programs. As a result, older engineers find it increasingly difficult to communicate with their younger counterparts. They also find it more difficult to read current engineering and scientific literature unless they have first undertaken an intensive



study of applied mathematics, physics, and related subjects. To accomplish this by taking courses directed toward a degree is seldom practical or efficient for practicing engineers.

To meet this need, the College of Engineering offers a variety of continuing education programs. These programs may be divided into two categories: (1) courses carrying continuing studies credit, and (2) noncredit courses, short courses, and conferences.

In general, the Continuing Education courses are offered according to need and are announced in *Spectrum* magazine, in special circulars, and in news media.

Courses Carrying Continuing Studies Credit

To distinguish between more informal short courses and courses of longer duration with formal evaluation of student performance, the University of Washington established in 1966 a category of courses that carry Continuing Studies credit. This specially designed credit is *not* intended for application toward a university degree; rather, its aim is to satisfy the immediate needs of professional engineers and their employers. Quantitatively, 1 credit in Continuing Studies normally requires the same amount of work as is normally needed for one quarter of University credit within the degree programs. All successfully completed courses will be entered on an official transcript available to the student as part of his educational record.

The courses in this category usually are offered on a basis of need and may take many forms. They may be offered over a quarter's duration, with lectures given during the evenings or weekends. On the other hand, they may take the form of the Continuing Education for Engineers Series, which combines the advantages of a residential course with those of independent studies.

Short Courses and Conferences

To serve the needs of the engineering and scientific community of the state, the University offers from time to time short intensive courses on advanced topics. Because of the nature of these courses, formal evaluation of the participants is not possible, and therefore these courses usually do not carry Continuing Studies credit. Each course usually covers a specialized topic and is offered on a level that approaches the forefront of current knowledge or technology.

General Education Programs

In its continuing education program, the College of Engineering also offers courses for nonengineers as part of the general education program. These serve to acquaint laymen with engineering methods, nomenclature, and discipline of thought.

GRADUATE PROGRAMS

(Graduate Program Advisers are listed under individual departments.)

Students who intend to work toward advanced degrees must fulfill the admission requirements of the Graduate School and of the department in which they expect to major. Acceptance will also depend upon the availability of the faculty and facilities for the program desired.

Departmental Graduate Programs

Graduate study leading to a Master of Science degree with departmental designation is available in the Departments of Aeronautics and Astronautics, Chemical, Civil, Electrical, Mechanical, and Nuclear Engineering, and in the Department of Mining, Metallurgical, and Ceramic Engineering.

The degree of Master of Science in Engineering (without departmental designation) is offered to qualified advanced students whose undergraduate majors have been in departments different from those in which they are working toward master's degrees, and to students who are doing graduate work in several engineering departments with the approval of advisers in their major departments.

The degrees of Master of Aeronautics and Astronautics and Master of Electrical Engineering are granted to students who satisfactorily complete an approved two-year program of graduate work in these departments.

Graduate study leading to the Doctor of Philosophy degree is available in Aeronautics and Astronautics, Ceramic, Chemical, Civil, Electrical, Mechanical, Nuclear Engineering, and Metallurgy.

Graduate students must satisfy the requirements for an advanced degree that are in force at the time the degree is to be awarded.

Interdepartmental or Intercollege Programs

BIOENGINEERING

A program in bioengineering is offered in cooperation with the School of Medicine. Work in this field can lead to the Master of Science in Engineering and the Doctor of Philosophy degrees. See *Interschool or Intercollege Program*, in latter part of *College of Engineering* section.

ENGINEERING MECHANICS

Graduate Advisers

Ellis H. Dill

Aeronautics and Astronautics
315B Guggenheim Hall

Billy J. Hartz
Civil Engineering
313 More Hall

Albert S. Kobayashi
Mechanical Engineering
261 Mechanical Engineering Building

A program in Engineering Mechanics is offered through the cooperation of the Departments of Aeronautics and Astronautics, Civil Engineering, and Mechanical Engineering. The student will normally enroll in one of these departments. Work can lead to the Master of Science degree with departmental designation, to the Master of Science in Engineering degree, or to the Doctor of Philosophy degree.

Engineering mechanics is an important link between new developments in the physical sciences, in mathematics, and in engineering. The field covers such topics as the mechanics of solids and fluids, dynamics, behavior of materials, and experimental mechanics.

Students entering this program should have completed an undergraduate degree in a field such as aeronautical, civil, or mechanical engineering, physics, engineering physics, mathematics, or an equivalent. The course program is planned through consultation with an adviser to fit the student's interests and background. The student's program will ordinarily include continuing study in mathematics and the engineering sciences (solid mechanics, fluid mechanics, thermodynamics, dynamics), and must satisfy the basic requirements of the department in which he is enrolled.

The engineering science courses for this program are normally selected from available courses offered by the Departments of Aeronautics and Astronautics, Civil Engineering, and Mechanical Engineering in the following areas: (1) Mechanics of Continua and Thermodynamics: heat transfer, electrodynamics and thermodynamics of a continuum; (2) Mechanics of Solids: theory of elasticity, theory of plasticity, viscoelasticity, thermoelasticity, properties of solids, fracture mechanics, experimental stress analysis; (3) Mechanics of Fluids: fluid mechanics, hydrodynamics, aerodynamics, gasdynamics, hydrodynamic waves; (4) Dynamics and Wave Propagation: advanced dynamics, nonlinear dynamics, space dynamics, vibration theory, random vibrations, wave propagation; (5) Structural Mechanics: theory of plates and shells, dynamics of structures, elastic stability, matrix theory of structures, variational and energy methods.

OCEAN ENGINEERING

Chairman

E. P. Richey

Ocean Engineering Committee

313 Hydraulics Laboratory

The expanding and diversifying needs of man are exerting greater pressures on the water environment (fresh and salt) from the edge of the shore to the deep ocean. The problems that arise with this greater utilization cross over the borders of many disciplines, such as oceanography, geology, fisheries, physics, biology, public affairs, transportation, law, and economics. Informed and careful planning and management of the marine resources is essential, for the impact of actions taken today will have lasting effects. To provide a curriculum for training the engineer to practice in this arena, programs in Ocean Engineering are offered as specialties in the several departments of the College of Engineering. Their objective is to develop a strong competence in one of the branches of engineering, with a capability of using that basic competence to cope with the interdisciplinary problems that arise in the marine setting. See also the following section on Social Management of Technology.

The requirements for entry into the program and for the graduate degrees are those of the department the student selects as fitting his career objectives. The interdisciplinary aspects of his own study program are worked out from marine-oriented courses in the engineering departments and in the special subject areas mentioned above. The research can be carried on either in individual departments or in the Ocean Engineering Laboratory facilities at the Applied Physics Laboratory. Although the program is primarily at the graduate level, interested undergraduates may participate by attending seminars and by selecting their free electives in the background areas of the special subjects or by planning an individual program through the B.S.E. offering in the College of Engineering.

SOCIAL MANAGEMENT OF TECHNOLOGY

Graduate Adviser

Edward Wenk, Jr.

Engineering and Public Affairs

428 Aerospace Research Laboratory

As the profound influence of technology on society has become more widely recognized both by the general public and the engineering professions, a keen interest has developed for steering technology more effectively to extract its benefits while minimizing undesirable and unwanted side effects. Such control requires a knowledge of scientific and engineering principles that are not only the tools of technological enterprise, but also those of economic, legal, social, and institutional considerations involved in the social choices as to what technology is expected to contribute to human aspirations.



To meet emerging career opportunities that require a better understanding of how technology and society interact, a new interdisciplinary and intercollege field of Social Management of Technology has been initiated at the graduate level with the intention of providing graduate students in the natural and social sciences and engineering with a comprehension of management and political processes by which technical knowledge, human resources, and capital are mobilized to a particular purpose. A seminar series considers the legal, political, and economic aspects of directing technology to realize desired benefits through general principles and case studies of public policy, including treatment of contemporary issues. Graduate students come from all fields of engineering, physical and biological sciences, atmospheric sciences, oceanography, fisheries, economics, geography, political science, business administration, and public affairs. Some research support is available for this program and provides assistance for graduate students working on theses in this new interdisciplinary area, under the direction of faculty from the College of Engineering and from a number of contributing departments in several non-engineering fields. Additional courses, degree opportunities, and further research support are expected as the program gains momentum.

COLLEGE PROGRAM

ENGINEERING ADVISING CENTER

Executive Director

Donald C. McNeese

111 General Engineering Building

Until such time as a student enters a departmental course of study he will be advised by and his records will be maintained in the Engineering Advising Center. In this area he will have the opportunity of working with staff drawn from the professional departments of the college. Some entering students may well know their chosen fields and can arrange to work directly with an adviser in a particular degree program. However, most students will wish to spend several quarters investigating the different fields of engineering. In deciding on his major, the student will prepare a statement of educational and career goals for approval of the department he wishes to enter. His records will then be transmitted to that department and he will work with an adviser in that area. The student who chooses

one of the nondepartmental programs (B.S.E. or B.S.) will confer with an adviser in the area in which he wishes to study, and his records will remain in the Advising Center.

The first planning of a program of studies must consider previous preparation and certain tests. An adviser in the Engineering Advising Center will aid in the initial registration. In addition to the resources of the advising center, the student may elect one or more career planning courses and may seek out advisers and engineering staff in the degree departments. The selection of courses to fulfill the requirements is the full responsibility of the student. The student is urged to check carefully the specific course requirements and the number of credits specified in the various areas.

COLLEGE COURSES

Executive Director

T. W. Macartney

111 General Engineering Building

All three types of engineering curricula are based on a common core of college requirements taken during the first two years. The credits required divide among mathematics, natural science, college courses, humanities and social sciences, and electives. Only a few courses are specified by number in any area, so a great deal of flexibility exists within each of the college requirements. During the first two years, the basic requirements component should be satisfied and some humanities and social science and free electives taken. During the last two years of the undergraduate program, the student completes these components and concentrates on the engineering course of study for his particular degree objective.

The college course area consists of courses known as Functional Techniques and Engineering Sciences and have the prefix ENGR. The functional techniques are essentially skills important to engineering and complement the mathematics and science base of engineering. The engineering sciences represent fundamental courses selected from a variety of engineering disciplines. By broadening his technical exposure the student is able to acquire an introduction to the principles of several disciplines and gain a general view of his major by seeing how similar principles are applied in other areas. The college courses are taught by engineering staff drawn from throughout the degree departments. Lists of college courses and humanities and social sciences follow the tabulation of a typical sample program for the first two years.

COLLEGE REQUIREMENTS

Basic Requirements

Mathematics (21 credits): Mathematics 124, 125, 126, plus 6 credits at 200 level or higher (Mathematics 238, 327, and 205 are suggestions).

Natural Science (21 credits): Physics 121, 122 (8), general chemistry (4); plus 9 credits. Sciences, especially chemistry and physics, are important to all engineering studies. Students may satisfy the total requirements by taking Chemistry 140 (4), 150 (4), 151 (2), and Physics 121 (4), 122 (4), 123 (4). However, a student with well defined objectives may elect advanced courses from chemistry, physics, atmospheric sciences, geological sciences, geophysics, oceanography, astronomy, or biology (elementary survey courses are not acceptable).

Engineering (College Courses) or alternates (28 credits) in two groups:

Functional Techniques (12 credits in at least 3 areas)

Visual Presentation
Written and Oral Communication
Computational
Design and Synthesis
Laboratory

Engineering Science (16 credits)

Materials
Discrete Mechanics
Continuum Mechanics
Linear Systems
Thermodynamics
Transportation

With his major adviser's approval the student may include mathematics, science, and engineering courses (usually upper-division courses and not in his major field).

Technical Preparation: (0 to 8 credits) See departmental requirements.

Humanities and Social Sciences: (30 credits required, minimum of 10 in either)

Engineering Course of Studies: (60–65 credits) See requirements of major departments or Interdisciplinary Engineering Studies Program.

Free Electives: A total of 180–185 credits is required for graduation.

Curriculum in the First Two Years

The student will be expected to concentrate on completing the basic requirements early in his college pro-

gram, normally during the first two years. Following is a typical sample program.

First Year

FIRST QUARTER	CREDITS
MATH 124	5
SCIENCE	4
CAREER PLANNING ELECTIVE	1
FUNC TECH, HSS OR ELECTIVE	3-5
	13-15

SECOND QUARTER

MATH 125	5
SCIENCE	4
FUNC TECH, HSS OR ELECTIVE	5-7
	14-16

THIRD QUARTER

MATH 126	5
SCIENCE	4
FUNCTIONAL TECHNIQUE	4
ENGR SCIENCE, HSS OR ELECTIVE	3-5
	16-18

Second Year*

FIRST QUARTER

MATH ELECTIVE	3
SCIENCE	4
CAREER PLANNING ELECTIVE	1
ENGR SCIENCE	3-4
HSS OR ELECTIVE	3-5
	14-17

SECOND QUARTER

MATH ELECTIVE	3
SCIENCE	4
ENGR SCIENCE	3-4
HSS OR ELECTIVE	3-5
	14-16

THIRD QUARTER

ENGR SCIENCE	3-4
ENGR SCIENCE	3-4
HSS ELECTIVE	3-5
ELECTIVE	3-5
	16-18

Total: 90 credits

*This schedule is easily altered to include early studies in a major field.

Undergraduate Programs

Entry is made into the program at the beginning of the junior year. The previous two years are spent in the preparatory college program described in detail in preceding sections of this catalog. The junior-year program requires an appreciation of the following specific subject areas and this fact should be taken into account in planning the two-year college program: ordinary differential equations, multivariable calculus and the rudiments of numerical analysis; the physics of optics, electromagnetism, electromagnetic wave propagation; kinematics and dynamics; material science, strength of materials; thermodynamics.

Curriculum in Aeronautics and Astronautics

The Department sets no specific requirements for technical preparation in the first two years, but does recommend Physics 123, 221, and 222 in satisfying the natural science requirements; Mathematics 224, 238;



327 in satisfying the mathematics requirements; and in fulfilling the engineering science requirement, the inclusion of Engineering 260 (Thermodynamics), Engineering 170 (Fundamentals of Materials Science), and Engineering 180 (Engineering Statics).

Third Year

FIRST QUARTER	CREDITS
AA 300 Aerodynamics I	3
AA 310 Orbital Mechanics	3
AA 320 Junior Laboratory I	2
AA 330 Structural Analysis I	3
ELECTIVES	4
	15

SECOND QUARTER

AA 301 Aerodynamics II	3
AA 311 Flight Mechanics	3
AA 321 Junior Laboratory II	2
AA 331 Structural Analysis II	3
ELECTIVES	4
	15

THIRD QUARTER

AA 302 Aerodynamics III	3
AA 312 Aeroelasticity	3
AA 322 Junior Laboratory III	2
AA 332 Structural Analysis III	3
ELECTIVES	4
	15

Fourth Year

Twenty-seven (27) credits of senior-level electives are to be chosen from the following listing:

Gas Dynamics: AA 400, 401, 402
 Design: AA 410, 411, 412
 Laboratory Projects: AA 420, 421, 422
 Structural Mechanics: AA 430, 431, 432
 Flight Mechanics: AA 440, 441, 442
 Space Mechanics: AA 450, 451, 452
 Propulsion: AA 460, 461, 462
 Structural Dynamics and Aeroelasticity: AA 480, 481

In choosing these electives it is expected that at least two one-year sequences will be followed in areas of specialization. Additional electives are required to make a total of 180 credits for graduation.

Students may wish to use some of their free elective credits and remaining credits in engineering science to further their preparation in Aeronautics and Astronautics. Appropriate subject areas would be: electronics, automatic control, mathematics, applied mathematics, and physics.

Additional mathematics or applied mathematics would be particularly appropriate for those students planning to continue in the graduate program.

Senior programs should be planned with the assistance of a faculty adviser and must meet with the approval of both the adviser and the department.

The Department accepts the credit/no credit option for grading, but warns the student who adopts that option of the risk involved in later evaluation of his or her records in regard to employment or admission to graduate programs.

Graduate Programs

Students who intend to work toward advanced degrees must apply for admission to the Graduate School and meet the requirements outlined in the *Graduate Study* section of this catalog.

Master of Science in Aeronautics and Astronautics

Students who have earned a bachelor's degree in engineering, physics, or mathematics are eligible for admission. Prospective candidates must complete an approved program of study. This program is tailored to the needs and interests of each student, but must possess breadth, through study of a variety of subjects, and depth through extensive study of a chosen field of specialization.

The program may either consist of 39 credits of course work, or 30 credits of course work and a minimum of 9 credits for thesis. The following courses are suggested to provide the required breadth and are usually taken by all students: 504, 530, 567, 568, 569, 571, 575. Depth is obtained through a choice of electives from among the courses available in this department or in other departments. A minimum of three quarters of full-time study or the equivalent is required after admission to the Graduate School. No foreign language is required.

Master of Aeronautics and Astronautics

This degree is intended to provide course work and research beyond that normally included in the degree program for the Master of Science in Aeronautics and Astronautics. The student must complete an approved program of study and research. This program usually consists of a prior Master of Science degree followed by 30 credits of course work and a thesis, for which 9 credits are given.

Doctor of Philosophy

The doctoral program consists of lectures, seminars, discussions, and independent study enabling the student to master his field and to demonstrate his ability to make original contributions. The formal steps toward the degree are listed in the *Graduate Study* section of this catalog. In addition to those requirements, the student is expected to be in continuous full-time residence for one academic year after advancement to candidacy.

Admission to the Graduate School does not imply admission to the Ph.D. program. Admission to the Ph.D. program is based upon the performance in the first year of graduate study. Students who have achieved a 3.50 grade-point average will be admitted to the doctoral program. In other cases, admission will be determined by the Department based on evidence of

superior ability, achievement, and motivation for advanced study and research.

COLLEGE COURSES

Functional Technique Areas

Visual Presentation

ENGR 120, Introduction to Graphical Analysis (2), replaces GE 104; ENGR 121, Graphical Analysis (4) replaces GE 105; ENGR 220, Graphical Mathematics (2) replaces GE 107; ART 105, 106, or 107, Drawing (3, 3, 3); ARCH 310, 311, 312, Introduction to Design Graphics (2, 2, 2).

Written and Oral Communication

ENGR 130, Techniques of Communication (3) replaces HSS 265; ENGR 131, Scientific and Technical Reporting (3) replaces HSS 270; ENGL 171, 172, College Writing (3,3); ENGL 271, 272, Advanced Expository Writing (3,3); ENGL 274, 275, 276, Verse Writing (5, 5, 5); SPCH 103, Basic Principles of Oral Communication (5)

Computational Technology

ENGR 140, Fundamentals of Problem Solving (4) replaces GE 111; ENGR 141, Computer Applications to Engineering Problems I (4) replaces GE 115; MATH 114, Elementary Computer Programming (2); MATH 374, Principles of Digital Computers and Coding (3)

Design and Synthesis Technology

ENGR 150, Design and Synthesis (3); ARCH 300, 301, 302, Introduction to Design-Laboratory (4, 4,4); ART 109, 110, Design (3, 3)

Laboratory Techniques

ENGR 160, Measurement Techniques and Experimentation (3); CHEM 151, General Chemistry Laboratory (2); CHEM 241, Organic Chemistry Laboratory (2); CHEM 242, Organic Chemistry Laboratory (2); MICRO 301, General Microbiology (3); MICRO 320, Media Preparation (2); PHYS 131, 132, 133, General Physics Laboratory (1, 1, 1); PHYS 231, 232, Electric Circuits Laboratory (3, 3); PHYS 331, Optics Laboratory (3)

Engineering Science Areas

Materials

ENGR 170, Fundamentals of Materials Science (4) replaces MTL E 250; ENGR 171, Materials Science Laboratory (1) replaces MTL E 251

Discrete Mechanics

ENGR 180, Engineering Statics (4) replaces GE 112; ENGR 230, Kinematics and Dynamics (4) replaces CIVE 291

Continuum Mechanics

ENGR 240, Introduction to Continuum Mechanics (4) replaces CIVE 292

Linear Systems

ENGR 190, Introduction to Logical System Design (3); ENGR 250, Introduction to Engineering System Dynamics (4)

Thermodynamics

ENGR 260, Thermodynamics (4)

Transportation

ENGR 270, Air-Water Interface Transportation Vehicles (3)

Career Planning

Career Planning

ENGR 110, Career Planning I (1) (College elective) replaces GE 100; CER E 198, Career Planning II (Department elective)

Humanities and Social Sciences Areas

Courses may be selected from the following areas either in the Department of Humanistic-Social Studies, College of Engineering, or from any other school or college on the campus.

Humanities Area

Architecture; Art, including art history; Classics; Comparative Literature; Drama; English Literature; Literature of other languages, in translation or in the original language; Music, except skill courses; Philosophy, courses with a humanities emphasis, e.g., Philosophy of Religion

Social Sciences Area

Anthropology, except physical anthropology; Business, Government, and Society; Communications, general courses in the mass media and their social functions; Economics, except statistics; Institute for Comparative and Foreign Area Studies; Geography, except physical geography and mapmaking; History, including specialized fields such as biomedical history; International Business; Philosophy, courses with a social science emphasis, e.g., Philosophic Issues in World Affairs; Political Science; Psychology; Sociology; Urban Planning

INTERDISCIPLINARY ENGINEERING STUDIES PROGRAM

Committee Chairman

R. F. Christman

234 Aerospace Research Laboratory

**Advising Center**

111 General Engineering Building

Preparation for many career opportunities is best achieved through interdisciplinary engineering studies. For students with such interests the Interdisciplinary Engineering Studies Program offers an opportunity to construct individual curricula designed to fill their particular educational goals. Two types of curricula are available for this purpose. The Bachelor of Science in Engineering permits construction of a professional engineering interdisciplinary program that may serve as a foundation for graduate studies of a similar nature. The nonprofessional Bachelor of Science provides even greater flexibility and is a good base for professional studies in law, medicine, or business, as well as other fields such as technical writing or engineering sales.

A student in these programs does not join an engineering department. Instead, the Engineering Advising Center provides a base for his records and initial advising. At the time he develops his personal interdisciplinary curriculum that must be approved by the Interdisciplinary Engineering Studies Committee, the student is assigned, when possible, to a faculty adviser with interests paralleling those of the student. Students are urged to contact the Advising Center for information on established procedures and guidelines for entry into the nondepartmental B.S.E. and B.S. programs.

Bachelor of Science in Engineering

A student must meet all college requirements for a bachelor's degree as specified earlier in this catalog in order to obtain a B.S.E. degree. These consist of 120 credits divided among mathematics, natural sciences, functional techniques, engineering sciences, humanities, and social sciences. The minimum credit requirement for graduation is 180 credits and there is no technical preparation requirement. The student should select the remaining 60 credits to provide a program of study consistent with his career objectives. He should include in his program 30 credits of at least 300-level engineering courses. He may choose the remaining 30 credits from any University offering in engineering, mathematics, and the natural sciences, but at least half of these courses must be of at least the 300-level. Courses elected in this 60-credit category should provide a logical sequence of course work aimed at the desired goal of the student.

Two different uses of the B.S.E. degree are available:

(1) Nondepartmental, but semi-formalized B.S.E. programs in bioengineering, ocean engineering, nuclear engineering, environmental engineering, and others that may evolve.

(2) Individually designed B.S.E. programs proposed by students whose interests are not met by department or program offerings.

The maturity and self-direction required of students in the interdisciplinary program precludes all but the most exceptional from entering the program formally prior to the attainment of 90 credits. A student must complete a minimum of 30 credits after being admitted to the Interdisciplinary Engineering Studies Program before he may be awarded a B.S.E. degree.

Bachelor of Science

To obtain a B.S. degree a student must satisfy the same college requirements (120 credits) specified for the B.S.E. degree. The minimum credit requirement for graduation is 180 credits and there is no technical preparation requirement. The student should select the remaining 60 credits to provide a program of study consistent with his career objectives. Of these 60 credits, at least 35 credits must be selected from engineering, science, or mathematics courses numbered 300 or above, and at least 25 of these 35 credits must be in engineering courses. The remaining 25 credits may be selected from among any courses offered by the University.

AERONAUTICS AND ASTRONAUTICS**Chairman**

R. J. H. Bollard

206 Guggenheim Hall

Professors

Harlow G. Ahlstrom, R. J. H. Bollard, Ellis H. Dill, Fred S. Eastman (emeritus), Ian M. Fyfe, Victor M. Ganzer, Abraham Hertzberg, Robert G. Joppa, Jirair Kevorkian, Gordon C. Oates, Carl E. Pearson, Robert E. Street

Associate Professors

Walter H. Christiansen, R. Reid Parmerter, William H. Rae, Jr., David A. Russell

Assistant Professors

Satyanadham Atluri, Reiner Decher, Keith A. Holsapple, Mahlon O. Ness, Juris Vagners

Research Associate Professor

M. E. Fourney

The Department carries on a teaching and research program designed to provide students with an understanding of the engineering sciences underlying modern technology and to provide opportunity for the advancement of these sciences and the technology.

The program emphasizes studies in dynamics and in fluid, gas, and solid mechanics in the undergraduate junior year to provide the foundation for senior-level studies which are selected by the student to satisfy his professional objective—either to continue studies at the graduate level or to enter directly into professional practice. Thus, it is in the senior, or final year of the undergraduate program, that the student begins applying his acquired understanding to the technology of interest to the department which is transportation vehicles operating underwater, in the air, in space, or at the interface of these environments.

The program contains the possibility for theoretical and experimental studies of all types of transportation vehicles; their structure, mechanics of motion, stability, performance, control, and the nature of the interacting forces giving rise to their motion. Such vehicles are airplanes, rockets, interplanetary space vehicles, balloons, parachutes, helicopters, surface effect vehicles, hydrofoil boats, planing and displacement-hull boats, submarines, tracked vehicles, and surface vehicles such as automobiles. Not only is there interest in the basic forces of thrust, weight, inertia, lift and drag, and their effect on the vehicle performing its assigned mission, but there is also involvement in studies of the interaction of these vehicles with the environment and their economic viability.

Naturally, these studies lead to other investigations which may, at first, seem unrelated. For example, current studies of the mechanical behavior of biological tissue arise from a long-term interest in the structural behavior of rocket motors. Another example is the study of oil slick motion in rough waters and heavy currents, arising from interest in fundamental fluid mechanics. Yet another is the study of laser devices arising from an interest in the generation of power with minimal pollution of the environment. These and other examples of senior- and graduate-level research projects establish the fact that this educational program, containing an emphasis on fundamental mechanics, prepares the student for productive professional activity in fields outside of the aerospace industry as well as within it.

The graduate study program, continuing through the Master of Science in Aeronautics and Astronautics, Master of Aeronautics and Astronautics, and the Doctor of Philosophy degrees, retains this emphasis on the understanding of the engineering sciences underlying modern technology. It is through this understanding that faculty and students hope to advance the understanding itself as well as the technology arising from it. A further advantage of this program emphasis be-

comes increasingly obvious as technology development and change quicken and the ability of faculty and graduates to readily become contributors to the advancement of these new fields increases. Faculty and students stand among the foremost contributors in the fields of high energy laser devices, continuum mechanics, laser holography, low pollutants energy converters, and applied mathematics. In addition, they are widely recognized for their contributions in those fields usually associated with aeronautics and astronautics, such as structural mechanics, stability and control, gas dynamics, orbit mechanics, wind tunnel testing, propulsion, and experimental stress analysis.

CHEMICAL ENGINEERING

Chairman

R. Wells Moulton
105 Benson Hall

Professors

Albert L. Babb, Morton M. David, Howard S. Gardner, Kermit L. Garlid, William J. Heideger, Lennart N. Johanson, Joseph L. McCarthy, R. Wells Moulton, Kyosti V. Sarkanen, Charles A. Sleicher, Jr.

Associate Professors

John C. Berg, Norman F. Sather

Assistant Professors

Bruce A. Finlayson, Carl W. Larson

Research Professor

Allan S. Hoffman

Today's rapidly changing technology offers many challenges in chemical engineering. Emphasis is placed on the development and application of processes and equipment in which matter is treated to induce a change in state (or phase), energy content, or chemical composition. Chemistry and physics are the underlying sciences of chemical engineering, mathematics is its quantitative language, and economics and human relations are its guides in practice.

The chemical engineering graduate of today must cope with new and complex technologies that until but a few years ago existed only in the minds of men with vision and imagination. For this reason and many others, today's undergraduate is presented with a less descriptive and a less industry-oriented approach to education than he was ten to fifteen years ago. The emphasis now is on a more fundamental treatment with a good foundation in mathematics, physics, and chemistry. Such a sound, fundamental background coupled with practical engineering training is needed to prepare the graduate for work in the wide diversity of problems



and variety of careers offered to the chemical engineer of today.

Undergraduate Programs

Adviser

R. Wells Moulton
105 Benson Hall

During the first two years, the student desirous of working toward a Bachelor of Science degree in Chemical Engineering will be completing the basic requirements of the College of Engineering. He should take Chemistry 140, 150, 151, and 160 (14 credits) in addition to Physics 121 and 122 (8 credits) in order to satisfy the natural science requirements. He should take for technical preparation Chemistry 231, 232, and 241 (8 credits). It is strongly recommended that Mathematics 238 and 327 (6 credits), Engineering 260, together with Chemical Engineering 200 (3 credits) also be taken as a career planning course.

CURRICULUM IN CHEMICAL ENGINEERING

Third Year

FIRST QUARTER	CREDITS
CH E 210 Material and Energy Balances	4
CHEM 455 Physical	3
Technical Electives	5
Electives	3
	<u>15</u>

SECOND QUARTER

CH E 326 Chemical Engineering Thermodynamics	4
CH E 330 Transport Processes I	4
*CHEM 456 Physical	3
CHEM 460 Physical Measurements in Chemistry	4
	<u>15</u>

THIRD QUARTER

CH E 340 Transport Processes II	4
CHEM 457 Physical	3
CHEM 461 Physical Chemistry Lab	2
Electives	6
	<u>15</u>

Fourth Year

FIRST QUARTER

CH E 435 Transport Processes III	4
CH E 436 Chem. Engr. Lab I	3
Technical Electives	3
Electives	5
	<u>15</u>

SECOND QUARTER

CH E 437 Chem. Engr. Lab II	3
CH E 485 Process Design I	3
Technical Electives	3
Electives	6
	<u>15</u>

THIRD QUARTER

CH E 486 Process Design II	5
Electives	10
	<u>15</u>

*ENGR 260 may be substituted.

Elective Chemical Engineering Courses

- 440 FLUID MECHANICS
- 450 HEAT TRANSFER
- 460 MASS TRANSFER
- 465 REACTOR DESIGN

- 470 CHEMISTRY OF WOOD
- 471 PULP AND PAPER TECHNOLOGY
- 472 PULP AND PAPER LABORATORY
- 480 PROCESS DYNAMICS AND CONTROL
- 481 PROCESS OPTIMIZATION
- 499 UNDERGRADUATE RESEARCH

Other Electives

- EE 301 Element of Electrical Engineering
- EE 302 Electrical Engineering Laboratory

A minimum grade-point average of 2.00 in chemical engineering courses is required for graduation.

Graduate Programs

Graduate Program Adviser

R. Wells Moulton
105 Benson Hall

The Department of Chemical Engineering offers courses leading to the degrees of Master of Science in Chemical Engineering, Master of Science in Engineering, and Doctor of Philosophy. Students who intend to work toward advanced degrees must apply for admission to and meet the requirements of the Graduate School.

Master of Science in Chemical Engineering

The requirements for this degree are a minimum of 39 credits, of which 30 credits are in formal course work and 9 in thesis. The course work is usually divided in the ratio of about two to one between Chemical Engineering and other departments. At least half of these courses must be numbered 500 or above.

Doctor of Philosophy

In addition to the general requirements of the Graduate School, students who wish to work toward the Ph.D. degree must pass a preliminary examination. This examination is normally taken after three quarters of satisfactory graduate study. It is designed to assess the student's comprehension of both undergraduate and graduate material and especially his ability to apply fundamental concepts to new and varied situations.

More detailed information on degree requirements is available from the Graduate Program Adviser.

CIVIL ENGINEERING

Chairman

Dale A. Carlson
201 More Hall

Associate Chairman

Holger P. Mittet
201 More Hall

Professors

Richard H. Bogan, Colin B. Brown, Dale A. Carlson, Jack R. Clanton, J. E. Colcord, Walter L. Dunn, Martin I. Ekse, Vernon B. Hammer, Charles W. Harris

(emeritus), Billy J. Hartz, Robert G. Hennes, Edgar M. Horwood, Alan H. Mattock, Ronald E. Nece, Charles H. Norris, Fred H. Rhodes, Jr. (emeritus), Eugene P. Richey, August T. Rossano, Jr., Roy B. Sawhill, Sergius I. Sergev (emeritus), Robert O. Sylvester, Robert B. Van Horn (emeritus), Desi D. Vasharhelyi, Edward Wenk, Jr., Harold E. Wessman (emeritus)

Associate Professors

Robert J. Charlson, Harry H. Chenoweth, Russell F. Christman, Ziad M. Elias, Roger J. Evans, Neil M. Hawkins, Albert L. Hoag, Joseph C. Kent, Dorland H. Konichak, Thomas W. Macartney, Donald C. McNeese, Richard H. Meese, William H. Miller, Holger P. Mittet, Robert W. Seabloom, Jerry B. Schneider, Mehmet A. Sherif (on leave), Howard S. Strausser, Jr., Ronald L. Terrel, Sandor A. Veress, Eugene B. Welch

Assistant Professors

Stephen J. Burges, Bruce W. Hunt, Jack D. Nicholls

Research Professor

Brian W. Mar

Research Associate Professor

Michael J. Pilat

Research Assistant Professor

Demetrious E. Spyridakis

Affiliate Professor

Halvard W. Birkeland

Affiliate Assistant Professor

William L. Clark

Lecturers

William F. Cottrell, Thomas W. Secrest

Research Associates

William M. Porch, Alan P. Waggoner

The civil engineer is the builder of public works and the partner of the architect in creating the physical plants that serve commerce and industry. He holds major responsibility for planning, design, construction—and sometimes operation—of dams, highways, waterworks, river and harbor development, bridges, commercial and industrial structures, waste disposal systems, railroads, and airports. Traditionally, the civil engineer has contributed his expertise to the solution of specified problems prescribed by entrepreneurs and public officials. In today's world the civil engineer's function is no longer limited to the execution of other people's decisions—the influence of technology on all human activity has become so pervasive that technological input is increasingly needed in the decision-making process at the planning stage. The modern civil engineer works with urban planners, economists, soci-

ologists, and with leaders in both public and private sectors to define the problems posed by the many vexing issues that are generated by, and must be faced in a sophisticated, technology-based society; and he then turns his attention to their solutions.

The modern civil engineer still requires a broad-based technical education. In his evolving role he still must bring to the conference table an understanding of what it is possible and practicable to achieve; to do this he must be skilled in design and construction as well as in theoretical analysis. He must still supplement his knowledge of mathematics, chemistry, and physics with training in the engineering sciences and in functional techniques. This occurs during the first half of his four-year baccalaureate program.

Undergraduate Programs

Adviser

Jack R. Clanton
201 More Hall

The first two years of the curriculum for the degree of Bachelor of Science in Civil Engineering are administered by the College of Engineering. The junior year provides a strong core in civil engineering planning, analysis, and design, with emphasis on problem formulation and the systems approach. A flexible senior year enables the student to prepare himself either for early entry into professional practice or for graduate study; to specialize or to become a generalist.

CURRICULUM IN CIVIL ENGINEERING

Third Year

FIRST QUARTER		CREDITS
CIVE 316	Geometronics	4
CIVE 342	Fluid Mechanics I	4
CIVE 363	Construction Materials	4
CIVE 393	Mechanics of Materials	4
		<hr/> 16

SECOND QUARTER

CIVE 320	Transportation Engineering I	4
CIVE 345	Hydraulic Engineering	4
CIVE 350	Environmental Engineering	4
CIVE 380	Analysis of Elastic Structures	4
		<hr/> 16

THIRD QUARTER

CIVE 366	Soils Engineering	4
CIVE 381	Concepts of Structural Design	4
CIVE 390	Environmental Systems Planning	4
Engineering Science		4*
		<hr/> 16

Fourth Year

Civil Engineering Electives		18
Humanities and Social Sciences		15†
Electives		15‡
		<hr/> 48

*In addition to 12 credits required in first and second years.

†In addition to 15 credits required in first and second years.

‡In addition to 5 credits required in first and second years.



Graduate Programs

Graduate Program Adviser

H. P. Mittet

201 More Hall

The Department of Civil Engineering offers courses leading to the degrees of Master of Science, Master of Science in Engineering, Master of Science in Civil Engineering, and Doctor of Philosophy. Programs of graduate study and research leading to these degrees are available in any of several fields: Engineering Mechanics, Hydraulic Engineering, Structural Engineering, Transportation, Construction, and Geotechnical Engineering, Water and Air Resources Engineering, Water and Air Resources Engineering, and Solid Waste Management.

The Department offers three master's degree programs as listed below, each of which requires 30 credits in course work and 9 credits of thesis. Where the normal thesis requirement is waived a report of equivalent creative work must be submitted.

A foreign language is not required in these master degree programs. The language requirement of the doctoral program may be modified or waived by the candidate's Supervisory Committee.

Master of Science in Civil Engineering

Programs leading to this degree are available to qualified civil engineering graduates who wish to continue their professional training.

Master of Science in Engineering

Programs of study leading to this degree may be undertaken by students who are deficient in undergraduate qualifications for the Bachelor of Science in Civil Engineering degree at the University of Washington, but who hold a bachelor's degree in some branch of engineering or are otherwise broadly prepared for graduate study in civil engineering.

Master of Science

This degree is available for students without engineering degrees who desire to apply their otherwise relevant undergraduate training to the solution of problems in some specific sector of civil engineering. Students also may be required to complete a limited core of preparatory courses from the undergraduate curriculum.

Doctor of Philosophy

Prospective candidates for this degree must complete an approved program of studies and a research program that makes a definite contribution to knowledge. Many doctoral programs can be strengthened by combining approved courses from several institutions.

ELECTRICAL ENGINEERING

Chairman

Daniel G. Dow

211 Electrical Engineering Building

Associate Chairman

F. Robert Bergseth

211 Electrical Engineering Building

Professors

F. Robert Bergseth, John L. Bjorkstam, Howard L. Blood, Robert N. Clark, Lyall B. Cochran (emeritus), Daniel G. Dow, Austin V. Eastman (emeritus), Hellmut Golde, Arthur E. Harrison, W. Ryland Hill, Jr., G. Lisle Hoard (emeritus), Chih-Chi Hsu, Akira Ishimaru, Curtis C. Johnson, David L. Johnson, Laurel J. Lewis, Dean W. Lytle, Jerre D. Noe, Endrik Noges, Irene C. Peden, Donald K. Reynolds, Walter E. Rogers, George S. Smith (emeritus), H. Myron Swarm

Associate Professors

Frank J. Alexandro, Jr., Jonny Andersen, F. Paul Carlson, Edward C. Guilford, Jay H. Harris, Alistair D. C. Holden, Peter O. Lauritzen, Floyd D. Robbins (emeritus), Rubens A. Sigelmann, Sinclair S. Yee

Assistant Professors

David C. Auth, Jean Baer, Mark J. Damborg, Graham L. Duff, Ward J. Helms, Richard D. Martin, Kenneth H. O'Keefe, Robert B. Pinter, Eugen G. Schibli

Lecturer

William W. Potter

Affiliate Professor

Betsy Ancker-Johnson

Electrical Engineering is concerned with the control of electricity and the electrical properties of materials in service to mankind. Electrical engineers may be involved in research, development, or design of devices, of assemblies of devices, or of major systems. Typical major systems of concern to this profession include those for communication, control, power distribution, and large-scale computation. In relatively recent times the profession has been rapidly changed, due in large part to the invention of the integrated circuit and the large-scale digital computer. These have made it possible to manipulate and store information in enormous quantity, and it is now possible to design very complex systems for control and communication. These are the responsibility of the electrical engineer.

The educational program of the Department of Electrical Engineering is based upon mathematics, physics, chemistry, and electrical fundamentals, which are of broad general significance to the profession. The student is also given experience in specific design and analysis

problems to prepare and motivate his interests toward those of the engineering profession.

Many subspecialties have arisen within the general field of electrical engineering. Among the most important of these are: system theory, computers, physical electronics, and electromagnetic propagation. Elective courses in these and many other areas are available in addition to the fundamentals upon which the profession is based.

A degree in engineering is a possible stepping stone to many different careers. The majority of bachelor's-degree engineers follow careers in design and development, while an increasing number go on for advanced degrees to be better prepared for work in development or to follow careers in research and/or education. Many engineering graduates also find rewarding careers in management, technical marketing, or government service.

Because of the phenomenal rate at which new discoveries are made and engineering practice must be revised, it is necessary to emphasize the fundamental principles that underlie engineering. In addition, the close relationships between technology and society require social and political awareness on the part of the engineer. In an attempt to partially meet this need, a significant emphasis is put on studies in the humanities and social sciences.

Undergraduate Programs

Advising

Students who have chosen electrical engineering as their major will bring their goals statement and file to the curriculum counselor in Room 213, Electrical Engineering Building. There they may be referred to a faculty adviser to discuss the technical aspects of their objectives and the curriculum. Students who have not already made a choice of major may also inquire in Room 213 for referral to a faculty adviser to discuss their questions.

Curriculum

The student will note under the general overall college requirements that the individual departments specify up to a total of 68-73 credits, depending upon the particular major. Some of these credits are known as "Technical Preparation," others are listed under "Engineering Course of Studies."

The technical preparation courses for the Bachelor of Science in Electrical Engineering degree are Mathematics 238 and Physics 123. Actually, the student is ready to begin his first electrical engineering courses as soon

as he has completed Mathematics 238 and Physics 122, perhaps sometime in the sophomore year.

In addition to the technical preparation courses, the Department of Electrical Engineering degree requirements under the "Engineering Course of Studies" category may be divided into four groups:

Specified Electrical Engineering Courses . . . 30 credits
(Electrical Engineering core courses 331, 333, 310, 312, 351, 371, 381, 383)

Electrical Engineering Electives 18 credits

Professional non-Electrical Engineering
Electives 4 credits
(These four credits are to be selected from courses at the 300 and 400 level in other engineering departments, in science, in economics, or in the business field.)

Free Electives 8 credits

It is anticipated that most students who begin their work at this University, and who select their major field early, will begin their Electrical Engineering core courses in the sophomore year in lieu of some of the courses listed under the general college schedule. Students who transfer from a community college, or who defer their selection of major, will find that the following suggested schedule will permit completion of degree requirements in two additional years:

Third Year

FIRST QUARTER		CREDITS
EE 331	Circuits and Systems I	4
EE 351	Electronics I	4
EE 310	Electronics Lab	3
HSS	Mathematics or Science	3-5
		14-16
SECOND QUARTER		
EE 333	Circuits II	4
EE 381	Electrophysics I	4
Engineering Science	. . . . .	4
HSS	. . . . .	3-5
		15-17
THIRD QUARTER		
EE 383	Electrophysics II	4
EE 371	Computer Operation	4
EE 312	Electrophysics Lab	3
Elective	. . . . .	3-5
		14-16

Fourth Year

FIRST QUARTER		
EE Elective	. . . . .	6
Professional Non-Electrical Engineering	. . . . .	4
HSS	. . . . .	3
Elective	. . . . .	3
		16
SECOND QUARTER		
EE Elective	. . . . .	6
HSS	. . . . .	3
Elective	. . . . .	6
		15

**THIRD QUARTER**

EE Elective	6
HSS	3
Elective	6
	<hr/>
	15

The total of free elective credits is 21 in order to reach the total of 180 credits required for graduation. In many ways these electives are the key to the realization of the student's individual educational goals. In some cases the electives will be taken in technical fields, but the opportunity exists for cultural enrichment or for pursuit of other areas of particular interest to the student. It is important that the student plan carefully, and, wherever possible, select courses with regard to an overall educational goal.

In addition to the core subjects the department offers a wide variety of electives in various subareas of electrical engineering. Although it is not necessary to specialize in one of the subareas, it is often desirable to do so, and the student is encouraged to consult with faculty members having similar interests as he selects his electives.

Students expecting to continue for the master's degree should choose their elective courses with care and consult with a faculty adviser concerning the requirements for graduate programs.

Further information is posted on the bulletin board outside Room 213 in the Electrical Engineering Building.

Graduate Programs**Graduate Program Adviser**

Robert N. Clark

311 Electrical Engineering Building

Students who intend to work toward advanced degrees must apply for admission to the Graduate School and meet the requirements outlined in the *Graduate Study* section of this catalog.

Although most graduate students in electrical engineering have received their bachelor's degree training in the same area, students from other physical sciences and from mathematics are often able to pursue graduate study in electrical engineering with little difficulty. Persons coming from other schools or other backgrounds are encouraged to discuss their probable standing with respect to a graduate program in this department with the Graduate Adviser.

Master of Science in Electrical Engineering

A total of 45 credits, of which 36 are in course work and 9 are for a suitable thesis, are required for this degree. Course work is usually divided between electrical

engineering and supporting courses in other fields in the ratio of approximately two to one. See also the section on the Master of Science in Engineering in this catalog.

Master of Electrical Engineering

This is a more advanced degree than that of Master of Science in Electrical Engineering. A total of 72 credits or course work and a more extensive thesis are required. Other requirements are similar to those for the Master of Science in Electrical Engineering degree.

Doctor of Philosophy

This is primarily a research degree. It is not conferred as a result of course work, no matter how faithfully nor how long it is pursued. The granting of the degree in this department is based essentially on general proficiency and distinctive attainments in electrical engineering, particularly on the demonstrated ability to pursue independent research. Evidence of research investigation is the production of a doctoral dissertation that makes a definite contribution to knowledge and is presented with a satisfactory degree of literary skill.

Prospective candidates for this degree normally have obtained the master's degree. They must meet the requirements of the Graduate School (see the *Graduate Study* section), and are selected by the department by means of a series of examinations given each year during Winter Quarter.

HUMANISTIC-SOCIAL STUDIES FOR ENGINEERS**Chairman**

Myron L. White

356 Loew Hall

Professors

Stuart W. Chapman, Robert G. Hennes, Dell R. Skeels, James W. Souther

Associate Professors

David C. Botting, Jr., Geoffrey K. Douthwaite, Eugene C. Elliott, Jay A. Higbee, Jack T. Leahy, Louis P. Trimble, Myron L. White

Lecturer

Wesley L. Hunner

Because engineers are significant agents of social change, the College is concerned to see that its students obtain an effective general education. To assist in achieving this goal is the purpose of the Department of Humanistic-Social Studies (HSS). Thus, the Department develops and presents courses designed to increase awareness of the full human setting in which the practice of engineering takes place. Members of the De-

partment's faculty also advise students on their selection of courses in the social sciences and the humanities.

The courses offered by the Department fall into three areas: the social sciences, the humanities, and scientific and technical communication.

In the first two areas, all HSS courses are appropriate for fulfilling the College requirement of 30 credits in the social sciences and humanities. To meet this requirement, students may take one or several HSS courses. They also may choose to meet the requirement entirely with these courses. For students who wish to do so, the Department has a flexible program offering a number of choices.

In scientific and technical communication, the Department provides elective and special courses by means of which students can increase their proficiency in an important part of their professional work.

Although the Department has a primary responsibility for engineering students, its courses are of interest and value to many students outside of the College. Consequently, the HSS offerings are open to all on campus.

INDUSTRIAL ENGINEERING

Industrial Engineering is concerned with the development, design, installation, operation, and improvement of integrated systems of men, machinery, materials, and information in a broad field of activity ranging from service institutions to manufacturing organizations. It draws upon specialized knowledge and skill in the mathematical, physical, and social sciences, together with the principles and methods of engineering analysis and design, to specify, predict, and evaluate the results to be obtained from such systems.

The Industrial Engineering curriculum consists of a regular four-year course of study in any engineering department that offers a full curriculum, supplemented by a fifth year devoted to study in industrial management, accounting, statistical applications, quantitative methods, and related subjects.

The program takes advantage of interaction with local industries in the Seattle area to provide valuable practical experience in the application of theory.

Undergraduate Programs

Advisers

Albert B. Drui

210 Mechanical Engineering Building

William C. Kielsing

211 Mechanical Engineering Building

Students who have completed their first engineering bachelor's degree and are in a fifth-year status working toward the Bachelor of Science in Industrial Engineering will be placed under the administration of the Mechanical Engineering Department and advised by the Industrial Engineering advisers. Other students who combine the Industrial Engineering program with their regular bachelor's degree will continue to register in their major department, but must keep an Industrial Engineering advising work sheet up to date in the Mechanical Engineering advising office, and will obtain curriculum counseling from the Industrial Engineering advisers.

The second degree, Bachelor of Science in Industrial Engineering, is granted when 45 credits in the curriculum outlined below are successfully completed. Technical electives can be used to make up the credits for required courses that have been taken for the first B.S. degree, but a minimum of 20 credits is required in the College of Engineering.

CURRICULUM IN INDUSTRIAL ENGINEERING

FIRST QUARTER		CREDITS
ME 410	Engineering Administration	3
ME 420	Engineering Reliability	3
ACCTG 210	Fundamentals of Accounting	3
B ECON 300	Managerial Economics	3
Electives from list below		3
		15
SECOND QUARTER		
ME 411	Engineering Economy	3
ME 417	Methods Analysis	3
Technical Elective in Accounting		4
Technical Elective in Operations Research		4
		14
THIRD QUARTER		
ME 419	Industrial Facilities Design	3
ME 516	Statistical Analysis of Engineering Measurements	3
Electives from list below		8
		14
Electives		
ACCTG 311	Cost Accounting	3
A ORG 440	Organization Theory	3
CETC 405	Critical Path Methods of Project Scheduling	2
EE 479	Fundamentals of Automatic Control	4
FIN 350	Business Finance	4
MKTG 301	Marketing Concepts	3
ME 304	Manufacturing Processes	3
ME 401	Metal Casting Theory and Design	3
ME 403	Material-Removal Processes	3
ME 404	Theory of Welding	3
ME 414	Industrial Safety	2
ME 420	Engineering Reliability	3
ME 451	Human Factors	3
ME 471	Automatic Control	3
ME 499	Research Projects	2-5
OP SYS 443	Scheduling and Inventory	3
OP SYS 460	Administration of Operations	4
PERS 301	Industrial Relations	3
PERS 445	Personnel Methods and Theory I	3
Q METH 450	Operations Research—Deterministic Models	4
Q METH 451	Operations Research—Stochastic Models	4

Graduate Programs

While the University does not award advanced degrees designated Industrial Engineering, interdisciplinary



graduate studies in the related areas of operations analysis, systems analysis, human factors, and work measurement and design are supervised by certain faculty in the Department of Mechanical Engineering. The degree of Master of Science in Engineering is awarded upon satisfactory completion of a 9-credit thesis and 30 credits of course work. Students who intend to work toward advanced degrees must apply for admission to the Graduate School and meet the requirements outlined in the *Graduate Study* section of this catalog.

MECHANICAL ENGINEERING

Chairman

Charles J. Kippenhan

142 Mechanical Engineering Building

Professors

Peter L. Balise, Jr., Morris E. Childs, Emmett E. Day, Ashley F. Emery, Joseph C. Firey, Charles J. Kippenhan, Albert S. Kobayashi, William J. Love, Dean E. McFeron, Harry J. McIntyre (emeritus), Bryan T. McMin (emeritus), Blake D. Mills, Jr., James B. Morrison, Stanley R. Murphy, Gilbert S. Schaller (emeritus), Raymond Taggart, Paul J. Waibler

Associate Professors

Daniel E. Alexander, John R. Bodoia, William S. Chalk, James D. Chalupnik, Richard C. Corlett, Richard W. Crain, Sr., Creighton A. Depew, Albert B. Druil, Paul W. Ford, Kurt R. Galle, Frederick B. Gessner, Michael Guidon III, Richard E. Holt, William C. Kieling, Frank R. Marshall, Howard C. Merchant, Roland E. Messer, Norman H. Roberts, Robert E. Sherrer, Karl H. Vesper, Jan Wolak

Assistant Professors

Bruce H. Adey, Jay W. Anderson, James D. Collins, Colin H. Daly, Jens E. Jorgensen, R. Blair Osborn, Colin J. Sandwith

Lecturers

Henry T. Meador, Donald F. Owens, Robert Y. Walker

Research Associate Professor

George C. Vlases

Research Assistant Professor

Lee L. Huntsman

Innovation for technological change is the prime goal of engineers. Mechanical engineers are concerned with bringing this about for a very wide spectrum of devices, machines, and systems. Some typical examples would include energy conversion devices for the production of power, machine tools for the production of

almost any conceivable object, systems for the control of all manner of machines and processes. There are but very few research, design, and production enterprises in an industrial setting that do not employ the skill and knowledge of mechanical engineers. Some mechanical engineers are engaged in engineering practice as designers and consultants, and some serve in governmental agencies at all levels, local to national.

Prerequisite to the wide spectrum of opportunities is the necessity for broad fundamental education. Chemistry and physics continue to be the underlying basic sciences. Communication skills in drawing and graphics, in mathematics and computers, as well as in oral and written English language are necessary. All three of these are used in departmental programs and are expanded as the acquired engineering concepts allow.

The engineering course of study requirement encompasses a core plus an option and is detailed in the section on Undergraduate Programs that follows. Additional elective courses can be selected to deepen and reinforce the option courses, or to broaden the field of knowledge as seems appropriate for the student in consultation with his adviser. Involvement of the departmental faculty in all three of the currently organized interdisciplinary areas, Aerospace Research Laboratory, Bioengineering Center, and Ocean Engineering Laboratory accommodates the widest range of students' interest. The importance of a balance between practical skills, and a good grasp of fundamentals cannot be overemphasized. The former are necessary to enter practice and the latter to stay in practice by providing a base for further learning either through graduate education or through the continuous lifelong self-education process.

Undergraduate Programs

Undergraduate Advisers

Student advising and counseling is performed by the entire departmental faculty, organized at any one time into a group of eight advisers, including a coordinating adviser. The membership rotates through the faculty according to a comprehensive plan to ensure continuity of function. The names of current advisers are posted in the departmental advisory office, 141 Mechanical Engineering Building, and on the faculty roster.

Professional Engineering Course Requirement

Technical preparation in differential equations and statics precedes the departmental offering. Courses in dynamics, thermodynamics, fluids and solid mechanics, materials, and systems and electronic instrumentation provide practice in engineering analysis by both classical and operational methods. Integration of these disci-

plines for the analysis and synthesis of manufacturing processes, engineering data analysis and engineering design complete the core requirements. Completion of three courses in one of the several options that are listed in the advising office, leads to satisfaction of the minimum professional engineering course requirement. A total of 180 credits is required for graduation.

The curriculum for the first two years is administered by the College of Engineering. Students entering are expected to have completed technical preparation courses in differential equations (Mathematics 238 or equivalent), and engineering statics (Engineering 180) before entering the following program.

CURRICULUM IN MECHANICAL ENGINEERING

Third Year

FIRST QUARTER		CREDITS
ME 320	Thermodynamics I (or elective)*	4
ME 352	Introduction to Mechanics of Solids	3
ME 365	Dynamics	4
HSS Elective		4
		15

SECOND QUARTER

ME 323	Thermodynamics and Heat Transfer	4
ME 343	Behavior of Engineering Materials	4
ME 373	Dynamics Systems Analysis	4
HSS Elective		4
		16

THIRD QUARTER

ME 304	Manufacturing Processes	3
ME 333	Introduction to Fluid Mechanics	4
ME 353	Mechanical Design Analysis	3
EE 400	Electronic Instrumentation and Control	4
		14

Fourth Year

FIRST QUARTER		
ME 480	Engineering Data Analysis	4
ME 495	Mechanical Engineering Design	4
ME Option		3
HSS Elective		4
		15

SECOND QUARTER

ME Option		3
HSS Elective		4
Technical Elective		4
Elective		4
		15

THIRD QUARTER

ME Option		3
HSS Elective		4
Elective		8
		15

*Students who have satisfactorily completed the College course in Thermodynamics will use these credits for an elective.

Graduate Programs

Graduate Program Adviser

Albert S. Kobayashi

261 Mechanical Engineering Building

Students who intend to work toward degrees must apply for admission to the Graduate School and meet the requirements outlined in the *Graduate Study* section.

The graduate offerings in mechanical engineering cover a broad spectrum. Courses are so arranged that students interested in the special fields of acoustics, energy conversion, engineering materials, gas dynamics, heat transfer, instrumentation and control systems, materials processing, or stress analysis will find well-integrated programs available. Additionally, students interested in interdisciplinary programs organized under the Aerospace Research Laboratory, the Bioengineering Center, and the Ocean Engineering Laboratory will find courses and faculty interests to accommodate almost any program desired. Work beyond that required for a bachelor's degree in mechanical engineering in the fields of physics, mathematics, aeronautics and astronautics, civil or electrical engineering is permitted and may be required by the student's Supervisory Committee.

Master of Science in Mechanical Engineering

This degree requires a 9-credit thesis and a minimum of 30 credits of approved course work, including the seminar courses 518-519-520. See also the section on Master of Science in Engineering in this catalog.

Doctor of Philosophy

Students working for this degree must complete an approved program of studies and a research program that makes a definite contribution to knowledge.

MINING, METALLURGICAL, AND CERAMIC ENGINEERING

Chairman

James I. Mueller

211 Roberts Hall

Professors

Donald L. Anderson, Frederick B. Brien, James I. Mueller, Douglas H. Polonis, O. J. Whittemore, Jr.

Associate Professors

Thomas F. Archbold, Henk I. Dawson, David B. Fischbach, William D. Scott, Thomas G. Stoebe

Assistant Professors

Robert J. Campbell, Jr., John H. Jones, Alan D. Miller, Richard R. Zupp

Affiliate Professor

Spencer H. Bush

The Department offers courses leading to the degrees of Bachelor of Science in Metallurgical Engineering; Bachelor of Science in Ceramic Engineering; Master of Science in Engineering; Master of Science in Metallurgical Engineering or in Ceramic Engineering; Master of Science in Ceramics or Master of Science in Metallurgy; and Doctor of Philosophy in the fields of metallurgy and ceramics.



As approved by the Board of Regents January 21, 1972, the programs in Mining Engineering are being discontinued over a period extending until December 16, 1976, to permit students who started their college studies before June 1972 to complete their degrees.

CERAMIC ENGINEERING

Division Head

James I. Mueller

301 Roberts Hall

Ceramic materials are high-temperature resistant, chemically durable, strong, and rigid. They include consumer products, building materials, and industrial materials. Ceramic engineers develop, produce, evaluate, and apply these materials in many environments.

Ceramic engineers are employed in a wide range of ceramic industries in research, development, production supervision, sales engineering, and management. Most major manufacturing industries, including chemical, electronic, automotive, metallurgical, petroleum, nuclear, and aerospace, utilize ceramics and employ ceramic engineers. In addition, ceramic engineers serve in government laboratories and installations, universities, and research institutions.

The educational program in ceramic engineering provides an understanding of the chemical, mechanical, and thermal properties of ceramics; of processing methods and their effects on properties; and of the feasibilities and economics of manufacture and application of ceramics. With this sound basic background, the graduate engineer is equipped to solve the many problems in manufacture and use of ceramics today and the emerging problems of this rapidly growing materials field.

Undergraduate Programs

Adviser

James I. Mueller

301 Roberts Hall

The engineering course of study leading to a Bachelor of Science in Ceramic Engineering includes a total of 61 credits, plus 8 credits of technical preparation courses, including Chemistry 160, Humanistic-Social Studies 300, and Electric Engineering 302. The selection of Chemistry 350 and 351 (Elementary Physical Chemistry) for satisfying part of the engineering science requirements is recommended.

Although no formal work-study program is available in ceramic engineering, assistance is offered in obtaining summer industrial experience during the summer vacation following the second and third years.

The following is a typical schedule of courses for the third and fourth years.

CURRICULUM IN CERAMIC ENGINEERING

Third Year

FIRST QUARTER		CREDITS
*CER E 300	Introduction to Ceramic Engineering	5
CER E 301	Ceramic Raw Materials	4
CER E 306	Excursion	1
MBT E 322	Metallurgical Thermodynamics	3
Electives		3
		15

SECOND QUARTER

CER E 302	Ceramic Processing I—Transport	4
CER E 311	Physical Ceramics I: Equilibria	3
CER E 312	Physical Ceramics II: Microstructure and Kinetics	4
CER E 322	Microscopy of Ceramics	3
Electives		3
		17

THIRD QUARTER

CER E 303	Ceramic Processing II: Methods	5
CER E 313	Physical Ceramics III: Properties of Ceramic Solids	4
CER E 323	Instrumental Analysis	3
CER E 499	Special Projects	1
Electives		3
		16

*Not required if student has completed Ceramic Engineering 198, 202, 203.

Fourth Year

FIRST QUARTER		CREDITS
CER E 307	Excursion	0
CER E 401	Equipment and Plant Design	3
CER E 411	Vitreous State	4
CER E 441	Undergrad. Seminar	1
CER E 499	Special Projects	2
Electives		5
		15

SECOND QUARTER

CER E 402	Equipment and Plant Design	2
CER E 442	Undergrad. Seminar	1
CER E 470	Refractories	3
CER E 499	Special Projects	2
Electives		7
		15

THIRD QUARTER

CER E 403	Ceramic Process Analysis	3
CER E 443	Undergrad. Seminar	1
Electives		12
		16

Graduate Programs

Graduate Program Adviser

William D. Scott

308 Roberts Hall

Students who intend to work toward advanced degrees must apply for admission to the Graduate School and meet the requirements outlined in the *Graduate Study* section of this catalog.

Master of Science in Ceramic Engineering

A total of 39 credits including 30 credits in course work, 9 credits for a suitable thesis, and a comprehensive oral examination complete the requirements for this degree.

Students may select courses and research in accordance with their special interests and objectives. Graduate work is largely concerned with advanced physical sciences as applied to ceramics; however, courses may also be selected that prepare for plant operation and management. Graduates of accredited ceramic engineering curricula and graduates of other accredited engineering curricula who complete the basic undergraduate courses in ceramic engineering and in science may work for this degree.

Master of Science in Ceramics

Students with undergraduate majors in science, particularly chemistry or physics, may work for this degree after completing basic undergraduate courses in ceramics. The same academic and thesis program is required for this degree as is described under Master of Science in Ceramic Engineering.

Doctor of Philosophy

Students who have completed at least one year of satisfactory graduate study may request an examination to determine their eligibility for work leading toward the doctorate. Accepted students must complete an approved program of studies and a research program that makes a definite contribution to the knowledge of the field.

METALLURGICAL ENGINEERING

Division Head

Douglas H. Polonis
328 Roberts Hall

Graduates in metallurgical engineering are in almost all industries concerned with the processing, fabrication, and utilization of materials. Attractive employment opportunities are available in many areas, including the automotive, nuclear power, manufacturing, and electrical industries, as well as the metallurgical industry. Metallurgical engineers become involved with production, research, development, and sales related to metals, alloys, and metallic products. Chemical metallurgists are concerned with technology related to the processing and refining of metals and their compounds. Physical metallurgists are concerned with the structure and properties of materials, the development of new materials with improved properties, and the application and performance of materials in modern engineering systems and design.

The first three years of the undergraduate program provide the broad science-oriented basis necessary for advanced courses in the general field of metallurgy. Emphasis is placed on the general intellectual development of the individual and on the cultivation of an imaginative approach to modern engineering problems.

The early part of the program should include a thorough grounding in the basic and engineering sciences, such as mathematics, physics, physical chemistry, and engineering mechanics. Subsequent studies are oriented toward the materials sciences, with emphasis being placed on atomic, molecular, and crystalline structure, the physical properties of solids, thermodynamic properties of materials, transport phenomena, reactions, and mechanical behavior. Problems related to the preparation, properties, and applications of metals and alloys are considered in the light of scientific and engineering principles.

The curriculum provides a liberal number of senior-year electives that are to be arranged through discussions with faculty advisers. Technical electives emphasize specific areas in metallurgy, such as electrical and electronic properties, nuclear materials, mechanical metallurgy, chemical metallurgy, and minerals processing. By the selection of appropriate courses, a student may orient his program toward careers in development research and production in industry, basic research, teaching, management, or sales. The senior-year electives allow the student to pursue in depth those aspects of metallurgical engineering that are most essential in preparing him for his professional career. Opportunities are available for a limited number of students to undertake senior projects that involve their participation in current research projects in the division.

Undergraduate Programs

Advisers

Thomas G. Stoebe, John H. Jones
326 Roberts Hall

A student who intends to work toward a Bachelor of Science in Metallurgical Engineering degree should plan his academic program in consultation with the undergraduate advisers of that division. He may transfer to metallurgical engineering for advising purposes at any time during the freshman or sophomore years, or after completing two years of study in the undergraduate engineering program. Metallurgical engineering majors are required to satisfy the basic requirements of the College of Engineering, as outlined in the section devoted to college courses. The list of courses recommended for majors in metallurgy should be considered in planning schedules to satisfy the engineering science and the natural science requirements during the first two years.

It is permissible to substitute humanities and social science courses offered by other departments for those given by the Department of Humanistic-Social Studies,



if such substitutions are more effective in meeting the needs of a particular student.

In the fourth year, students have an opportunity to plan their programs in accordance with individual goals and interests. The technical electives in the senior year must include at least 18 credits of senior-level courses in metallurgical engineering, exclusive of Metallurgical Engineering 499. Senior-level course offerings are available in physical metallurgy, chemical metallurgy, and mineral processing. Electives in labor relations, business administration, mechanical engineering, and economics are recommended for students interested in plant operation and administration.

Recommendations for Fulfilling Basic College Requirements

1. Electives in Metallurgy

Metallurgical Engineering 198 (Career Planning in Metallurgy), 201 (Modern Metallurgy), 202 (Special Projects)

2. Natural Science

Chemistry 140, 150, 160 (General), 350, 351 (Physical); Physics 121, 122, 123, 221 (Mechanics Electromagnetism and Oscillatory Motion, Waves, Quantum Physics)

3. Engineering Science

Engineering 170 (Fundamentals of Materials Science), 171 (Materials Science Laboratory), 240 (Introduction to Continuum Mechanics), 260 (Thermodynamics)

CURRICULUM IN METALLURGICAL ENGINEERING

Third Year

FIRST QUARTER		CREDITS
MET E 301	Met. Sys. and Instrumentation	3
MET E 322	Met. Thermodynamics	3
MET E 361	Structure of Solids	4
Electives		5
		15

SECOND QUARTER

MET E 323	Met. Transport Phenomena	3
MET E 325	Extractive Metallurgy I	4
MET E 362	Properties of Solids	4
Electives		4
		15

THIRD QUARTER

MET E 306	Metallurgy Excursion	1
MET E 326	Extractive Metallurgy II	4
MET E 363	Reactions in Solids	4
Electives		6
		15

Fourth Year

FIRST QUARTER

MET E 468	Undergrad. Seminar	1
Technical Electives		9
Electives		5
		15

SECOND QUARTER

MET E 468	Undergrad. Seminar	1
Technical Electives		9
Electives		5
		15

THIRD QUARTER

MET E 468	Undergrad. Seminar	1
Technical Electives		9
Electives		5
		15

A minimum of 180 credits is required for the degree of Bachelor of Science in Metallurgical Engineering.

Graduate Programs

Graduate Program Adviser

Douglas H. Polonis
328 Roberts Hall

Students who intend to work toward advanced degrees must apply for admission to the Graduate School and meet the requirements outlined in the *Graduate Study* section of this catalog.

Master of Science in Metallurgical Engineering

A total of 39 credits, including 30 credits in acceptable course work, 9 credits for a suitable thesis, and a comprehensive oral examination are required for this degree. Prospective candidates may select courses in accordance with their special interests and objectives.

Master's degree work is largely concerned with advanced materials science as applied to physical metallurgy, extractive metallurgy, or mineral processing. However, courses may also be selected that prepare for plant operation and management. Graduates of accredited metallurgical engineering curricula and graduates of other engineering curricula who complete the basic undergraduate courses in metallurgical engineering may work for this degree.

Master of Science in Metallurgy

Students with undergraduate majors in science, particularly physics or chemistry, may work for this degree after completing basic undergraduate courses in metallurgy or equivalent.

Doctor of Philosophy

Students who have completed one year of graduate work may request an examination to determine whether or not the faculty will advise proceeding to the Ph.D. General Examination. A critical examination of the applicant's record, recommendations, and proposed course of study will be pertinent to this decision. In addition to course work, each student is required to prepare for a General Examination on a list of subjects selected by his Supervisory Committee. This examination will be taken at the end of the second year or during the third year of residence. The General Examinations are sufficiently comprehensive to demonstrate the student's ability to deal with broad aspects of materials science, as well as his specialized subject area. Each Candidate is required to present a written disser-

tation that makes an original and independent contribution to knowledge. Proficiency in basic research is of paramount importance. The research is to be conducted in the University laboratories. The Final Examination consists of the student's oral defense of his dissertation.

MINING ENGINEERING

Division Head

Donald L. Anderson
325 Roberts Hall

As approved by the Board of Regents, January 21, 1972, the programs of Bachelor of Science and Master of Science in Mining Engineering are being discontinued over a period extending until December 16, 1976. Students who have entered the University before June, 1972, and who will complete their degrees before December 16, 1976, will continue to be accommodated. Transfer students who can expect to complete their degree requirements by December 16, 1976, will also be accepted into the program.

Information and personal assistance in planning a curriculum leading to a degree in mining can be obtained by writing to the Division Head, Prof. Donald Anderson, by calling (206) 543-2611 or (206) 543-2600.

It is anticipated that undergraduate courses related to mineral natural resources and the mineral industries will continue to be offered as electives for students in the natural sciences and engineering. Through use of the new and flexible program leading to the Bachelor of Science in Engineering, students can acquire the background in the mineral resource field to seek employment in the industry or become qualified to continue graduate studies in mining engineering at another institution.

NUCLEAR ENGINEERING

Chairman and Graduate Program Adviser

Albert L. Babb
303 Benson Hall

Professors

Robert W. Albrecht, Albert L. Babb, Kermit L. Garlid

Associate Professors

William S. Chalk, Norman J. McCormick, Maurice A. Robkin, Loren C. Schmid, Gene L. Woodruff

Affiliate Professor

Karl E. J. Wirtz, Kernforschungszentrum Karlsruhe, Germany

Research Associate Professors

Eugene D. Clayton, William C. Leith, George C. Vlases

Affiliate Associate Professors

Tommy W. Ambrose, Battelle-Seattle; John C. Fox, Battelle-Northwest; Peter L. Hofmann, WADCO

Senior Nuclear Engineer

Albert W. Wakefield

Associated Faculty

Douglas H. Polonis (Mining, Metallurgical, Ceramic Engineering); Kenneth L. Jackson (Radiological Sciences), Peter Wootten (Radiology)

Nuclear engineering is concerned with the release, control, and utilization of all forms of energy from nuclear sources. The discipline did not exist until about twenty-five years ago when concerted efforts were begun to develop peaceful uses of nuclear energy, such as central station power, ship propulsion, radioisotope applications, and space applications. It has now emerged as a distinct discipline and the demand for engineers with specific training as nuclear engineers has been strong. Future development of fast-breeder reactors, controlled thermonuclear energy, and other clean-energy sources will provide additional challenges for nuclear engineers. Not only will they need to solve technical problems, but future engineers will also have to provide solutions that preserve and enhance the environment. These challenges will require thorough education and training.

The successful engineering of nuclear energy projects involves the use of skills and specialties in many areas other than the basic area of applied nuclear physics. These include heat transfer and fluid flow, metallurgy, stress analysis, automation and control, corrosion, thermoelectricity, thermionics, and chemical processing. Thus, although the nuclear engineering program is administered by the Department of Nuclear Engineering, close relations exist with other engineering and science departments.

The Department offers courses of study leading to the Bachelor of Science in Engineering (B.S.E.) degree with a nuclear engineering emphasis, the Master of Science in Engineering (Nuclear) degree, and the Doctor of Philosophy degree. In addition, a sequence of undergraduate courses (484, 485, 486, and 487) is offered for students in engineering, physical science, or life science programs who wish to obtain an orientation to the nuclear energy field with a minimum of prerequisite courses.

Bachelor of Science in Engineering (Nuclear Engineering Emphasis)

The course of study for the B.S.E. degree with a nuclear engineering emphasis is designed to provide the



student with (1) a background in the fundamental mathematics and physics needed for nuclear engineering applications; (2) an introduction to nuclear engineering appropriate for either advanced study in nuclear engineering or employment at the bachelor's degree level, and (3) a foundation in an area of engineering that complements nuclear engineering as a discipline.

Recommended prerequisites to the course of study are:

COURSES	CREDITS
MATH 238 Elements of Differential Equations	3
PHYSICS 123 Waves	4
	<hr/> 7

The course of study consists of:

Fundamental Mathematics and Physics Courses

COURSES	CREDITS
MATH 324 Advanced Calculus I	3
MATH 325 Advanced Calculus II	3
PHYSICS 327 Introduction to Nuclear Physics	3
	<hr/> 9

Nuclear Engineering Courses

COURSES	CREDITS
NUC E 400 Intro. to Nuclear Reactor Analysis	4
NUC E 484 Introduction to Nuclear Engineering	4
NUC E 485 Nuclear Instruments	3
NUC E 486 Nuclear Power Plants	3
	<hr/> 14

Complementary Engineering Studies

A total of 37 credits is required to satisfy this component which is designed by the student and must be approved by the Interdisciplinary Engineering Studies Task Group and the Chairman of the Department of Nuclear Engineering. Fields of study that provide a sound complement to nuclear engineering include: Instrumentation, Heat Transfer and Thermodynamics, Fluid Mechanics, Systems Analysis, Materials, Chemical Processes, and Numerical Analysis.

Master of Science in Engineering (Nuclear)

A student with a bachelor's degree in engineering, mathematics, physics, or chemistry is eligible for admission. Since a good background in mathematics and physics is desirable, a student entering the program is encouraged to establish a strong foundation in atomic and nuclear physics and in advanced mathematical analysis during his undergraduate studies.

A minimum of 39 credits is required for the degree. Of these, 30 credits are in formal course work and 9 in a thesis project. The course work includes basic courses in nuclear reactor theory, nuclear engineering laboratory, and nuclear reactor engineering in addition to the nuclear engineering seminar. At least 7 credits in nuclear engineering courses numbered 530 and above, and 6 credits in an elective course sequence in mathe-

matics, physics, or engineering science are required. If a student has a bachelor's degree in nuclear engineering, the course program will be modified to meet his needs. A foreign language is not required.

Doctor of Philosophy

The doctoral program consists of lectures, seminars, informal discussions, and independent study and research that enable the student to become expert and make original contributions in his field. Approximately one full year of course work beyond the master's degree is usually essential. Courses are selected on the basis of a student's interest and background, and may be chosen from offerings of other departments, as well as the Department of Nuclear Engineering. A student may specialize in several areas, each representing an important aspect of nuclear technology.

1. Neutronic Analysis of Nuclear Systems

This area is primarily concerned with the analysis of fission reactors and other neutronic systems from a fundamental point of view. It would include topics such as neutron transport theory; the slowing down, thermalization, and diffraction of neutrons; fast reactor systems; criticality; and mathematical and computational methods. Auxiliary courses such as advanced physics, quantum mechanics, and advanced mathematics are offered by the Departments of Physics and Mathematics.

2. Nuclear System Dynamics

In this area a student would concentrate on the time-dependent behavior of reactors and on other nuclear engineering systems. The stability and control of nuclear reactors, noise analysis, and pulsed neutron source analysis would be included. Auxiliary courses in the analysis of random processes, in control system analysis, and in applied mathematics are available in the Departments of Electrical Engineering and Mathematics.

3. Thermonuclear Systems and Plasmas

This area includes the study of plasmas and their behavior, and explores the problems and promises associated with fusion reactors. Emphasis is on the fundamental characteristics of plasmas, and both theoretical and experimental work is possible. Auxiliary courses in advanced physics, electricity and magnetism, and collision theory are available in the Department of Physics.

4. Engineering Analysis of Nuclear Systems

This program is concerned with the engineering aspects of nuclear systems. Some of the possible areas are:

Thermal-Hydraulics, concerned with heat transfer to different fluids, such as boiling liquids and liquid

metals, combined conduction-radiation heat transfer, and steady-state and transient flow problems in single-phase and two-phase flow. Auxiliary courses in advanced heat transfer and fluid mechanics are available in the Departments of Mechanical Engineering and Chemical Engineering.

Materials, concerned with the effect of neutrons and ionizing radiation on materials, and the properties of materials used in nuclear engineering systems. Auxiliary courses are available in the Department of Mining, Metallurgical, and Ceramic Engineering.

Chemical Engineering, concerned with the separation and recovery of nuclear fuels and products, with fuel management, with optimization of separations processes, and with process control. Auxiliary courses are available in the Department of Chemical Engineering.

Environmental Engineering, concerned with the application and control of nuclear energy systems and with nuclear radiations in our environment. It includes atmospheric and water pollution; control, disposal, and possible uses of radioactive and thermal by-products; optimization of nuclear reactor siting; and the analysis and optimization of power systems where nuclear reactors are incorporated with other power sources. Auxiliary courses are available in the Departments of Civil Engineering and Atmospheric Sciences.

5. Bionuclear Engineering

The program in Bionuclear Engineering involves the student in the application of methods and techniques of nuclear engineering to the study of biological systems. It includes the use of trace-element analysis by neutron activation, treatment and diagnosis of disease using nuclear energy, and the interaction of nuclear radiation with biological materials. Auxiliary courses are available in the Departments of Physiology and Biophysics and Radiology.

6. Other Areas

Other areas in which nuclear engineering systems and principles may be applied are oceanography, marine sciences, forensic sciences, and direct energy conversion. In these areas specific programs can be designed to meet the student's interests and goals.

Aspirants to the degree of Doctor of Philosophy must pass, successively, a written and oral qualifying examination, a General Examination for admission to candidacy, and a Final Examination. The qualifying examination may be taken after 30 credits of graduate work have been successfully completed, and should be completed during the second year of regular graduate study. The qualifying examination is given once during each Autumn Quarter and each Spring Quarter. It is

designed to assess the student's understanding of the basic scientific and engineering concepts upon which his doctoral work will be based. The subject material includes undergraduate fundamentals in mathematics, physics, and the engineering sciences, as well as material in the first year of graduate work in nuclear engineering.

In the oral General Examination the student is examined on topics related to his field of specialization in nuclear engineering and the area in which he plans to do his dissertation research. A student is not permitted to take the General Examination until he has been accepted by a member of the faculty as a research student. A student should take the General Examination soon after passing the qualifying examination, usually within one year. Passing the General Examination constitutes admission to candidacy for the Ph.D. degree.

A prospective candidate for the degree is expected to conduct an original and independent investigation in one of the fields of nuclear engineering. The results of this research, which must yield a significant contribution to knowledge, are submitted as a dissertation. In his Final Examination, the student presents and defends these results orally.

Departmental brochures, available on request, furnish detailed accounts of the requirements and procedures involved in the programs for advanced degrees as well as the current research interests of the faculty.

INTERSCHOOL OR INTERCOLLEGE PROGRAM

BIOENGINEERING

Director

Robert F. Rushmer
Aerospace Research Laboratory

Assistant Director for Engineering

Curtis C. Johnson
Aerospace Research Laboratory

Assistant Director for Health Sciences

H. Fred Stegall, M.D.
G213 Health Sciences

Center for Bioengineering Staff

Allan S. Hoffman, D.Sc., Research Professor
John Chimoskey, M.D., Research Assistant Professor
Lee L. Huntsman, Ph.D., Research Assistant Professor



Steve L. Johnson, M.D., Research Assistant Professor
 Donald W. Baker, Technical Director
 Graham L. Duff, Ph.D., Assistant Professor of Electrical Engineering and Bioengineering
 Jens Jorgensen, Assistant Professor of Mechanical Engineering

Graduate Student Advisers

Colin Daly, Assistant Professor (Mechanical Engineering); Allan S. Hoffman, Professor (Chemical Engineering and Bioengineering); Gordon Oates, Associate Professor (Aeronautics and Astronautics); Robert Pinter, Assistant Professor (Electrical Engineering); D. H. Polonis, Professor (Mining, Metallurgical, and Ceramic Engineering); Maurice Robkin, Associate Professor (Nuclear Engineering); Charles Sleicher, Professor (Chemical Engineering)

The Bioengineering Program at the University of Washington is large and diverse, characterized by unusual breadth in the College of Engineering and strong ties with clinical medicine. The focal point of the Bioengineering Program is the Center for Bioengineering, an interdepartmental unit reporting to the deans of both the College of Engineering and the School of Medicine. The Center includes a core staff representing several engineering and life-science disciplines and engaged in advising, teaching, and support of collaborative research. The overall Bioengineering Program is interdisciplinary in character and enjoys active participation by faculty in most engineering departments and many health sciences divisions. This wide scope allows a variety of educational opportunities with many ongoing research projects ranging from fundamental investigation to development of clinically-useful techniques and devices. The key to the growth of this effort has been the establishment of collaborative projects wherein engineers and life scientists conceive and carry out projects jointly, very often with a student as a vital member of the research team. Such collaborative arrangements extend beyond the campus to hospitals, industry, and research organizations outside the University. Training at all levels emphasizes full competence in engineering and exposure to the life sciences of a type and extent based on goals of the individual student.

Undergraduate Program

Undergraduate students have two educational pathways from which to choose. They may pursue training in bioengineering by enrolling in a departmental engi-

neering program and using their electives to take health science and interdisciplinary courses. The engineering departments are expanding their elective options, providing attractive opportunities for those students who wish to bring a specialized engineering discipline to bear on biological problems.

On the other hand, those students whose engineering interests cross departmental lines or who desire a more intensive exposure to the biological sciences will find the Bachelor of Science in Engineering programs of studies more suited to their objectives. While the curriculum is highly flexible and may be tailored to students' educational goals, this B.S.E. program will consist of three basic requirements that must be satisfied: (1) A broad introduction to engineering, including such areas of importance to bioengineering as materials, instrumentation, fluid mechanics, etc.; (2) extensive training in one area of engineering; and (3) a broad exposure to the life sciences through biological and interdisciplinary courses.

Graduate Programs

The great diversity of problem areas within bioengineering is not consonant with a single well defined graduate program of study. Instead, the student enrolls in that engineering department which is most suitable for his career objectives, and utilizes the curricular flexibility within that department to pursue his bioengineering interest. In all cases, the program of study is designed to produce a well educated engineer with a supplemental education in biology of a type and depth appropriate to his professional long-range goals and his chosen thesis area.

Involvement in bioengineering during studies for the master's degree requires that a selection of courses in biological function and structure be worked into the program of engineering study in preparation for research on the chosen thesis topic. The biological education is designed to prepare the student to participate in collaborative research with biologists, basic medical scientists, or physicians.

Programs of study for the degree of Doctor of Philosophy involve a full course of study in engineering, an appropriate involvement in biological course work selected in consultation with engineering and life sciences advisers, and a research problem that constitutes a substantial contribution to knowledge. (See also the section under *Bioengineering* in the School of Medicine.)



FISHERIES

Dean

Douglas G. Chapman
204 Fisheries Center

Professors

Milo C. Bell, Donald E. Bevan, Robert L. Burgner, Douglas G. Chapman, Kenneth K. Chew, Allan C. DeLacy, Lauren R. Donaldson, Hiroshi Kasahara, John Liston, James E. Lynch (emeritus), Ole A. Mathisen, Gerald J. Paulik, Brian J. Rothschild, William F. Royce, Ernest O. Salo, Allyn H. Seymour, Frieda B. Taub, Richard Van Cleve, Arthur D. Welander

Associate Professors

George W. Brown, Jr., G. Ivor Jones, Jack R. Matches, Roy E. Nakatani, George M. Pigott, Gerard F. Schreuder, Lynwood S. Smith, Richard R. Whitney

Assistant Professors

Don W. Hagen, William K. Hershberger, Victor Riddle, Todd W. Thorslund, Richard S. Wydoski

Research Professors

Kelshaw Bonham, Edward E. Held, Max Katz

Research Associate Professors

William R. Schell, Donald F. Winter

Research Assistant Professors

Lewis J. Bledsoe, Donald McCaughran, Sigurd M. Olsen, Donald E. Rogers, Quentin J. Stober

Senior Research Associates

Gary E. Lord, Bruce S. Miller, Richard E. Thorne

Lecturers

Donald F. Amend, Andrew W. Anderson, John R. Brett, John A. Dassow, Cadwalader H. Ellis, Robert A. Erkins, Richard F. Foster, Louis G. Germain, Charles V. Gibbs, John B. Glude, W. Brad Hall, Allan C. Hartt, Gary W. Isaac, Harold E. Lokken, Donald C. Malins, Clifford J. Millenbach, Paul R. Olson, A. John Ross, Clyde S. Sayce, Maurice E. Stansby, Arnie J. Suomela, Herbert C. Tegelberg, Henry Wendler, Toshio Yasutake, Walter V. Yonker

Adjunct Professor

Erling J. Ordal

In a hungry world, man turns more and more to the living resources of the waters. Mankind has, for a long time, harvested wild stocks; in recent decades methods of harvesting have become more sophisticated and the need for management of fisheries stocks much greater. To ensure optimum exploitation and proper management of such stocks we must more thoroughly understand all aspects of the biology of the exploited species, their interactions with each other and with other species, and with the marine environment in which they live. We must also understand more about the various methods of exploitation and of their effects, both short range and long range. These are some of the challenges to be met by fishery science and management.

Aquaculture (farming of the aquatic environment) is an ancient practice to which modern science is now



being applied. The salmonid hatchery rearing program of the Pacific Coast of the United States has accomplished a great deal in a few decades but the problems it faces in decades to come are even greater as conflicts arise over water usage and as population pressures increase. Resolution of these problems will require knowledge not only of fisheries biology and physiology, but also of genetics, nutrition, fish behavior, hydraulic engineering, and economics, as well as the principles of experimental design and operations research. The management of fisheries resources embraces not only fin fish but also shellfish, the latter an important resource in the United States and throughout the world. Moreover, this management must encompass not only wild stocks but, increasingly, those cultivated in whole or in part; in either case, many different sciences may contribute to the necessary understanding of aquaculture.

In the United States, a decreasing work week and increasing leisure have meant an even further demand on fisheries. Recreational fishing is rapidly becoming a major factor in the need for increased production, and for the well trained management biologist. To meet this need, the College has broadened its base of training to include, in the undergraduate curricula, a much greater emphasis on fisheries administration.

Fish and shellfish represent a very important resource from the rivers, lakes, and oceans of our world, but there are many other uses for these waters—power, navigation, recreation, sea-bed minerals, waste disposal. Students with broad training from the College of Fisheries will frequently find their employment with organizations that use water in other ways; for example, power companies, agencies that monitor pollution, etc. Whether they work with the aquatic environment as a whole or more strictly with its living resources, they are almost certain to be in positions where they can significantly contribute to improving the quality of our environment.

Founded in 1919, the College of Fisheries has been intimately associated with the development and conservation of the fisheries of the northeastern Pacific Ocean.

The College attempts, always, to deal with whole problems rather than with isolated technical questions, an approach which involves many phases of biology with particular emphasis on the quantitative aspects. Full attention is given to political, social, legal, and economic problems associated with the use of resources. Although fishery problems of the Northwest are emphasized, they are examined as case histories, with many features ap-

plicable to problems of harvesting aquatic resources throughout the world, and, as a result, many foreign students register in the College.

Since commercial fishing is so closely related to the food industry, the College maintains an Institute for Food Science and Technology to prepare food scientists for careers in both industry and government. Both the graduate and undergraduate programs emphasize the role of the basic physical and biological sciences in the solution of problems that have resulted from the recent technological revolution in the food industry.

Although the Food Science program concentrates on general principles applicable to a wide range of food products, the extensive research program is largely concerned with marine and freshwater products of the Pacific Northwest. The program attracts many out-of-state and foreign students, particularly at the graduate level.

The College of Fisheries offers courses leading to the degrees of Bachelor of Science in Fisheries, Bachelor of Science with a major in Fisheries, Bachelor of Science with a major in Food Science, Bachelor of Science with a major in Wildlife Sciences in the College of Fisheries, Master of Science, and Doctor of Philosophy.

The College programs are designed to provide both the scientific training and the professional competency necessary for graduates to satisfy the various needs of their chosen fields. A Bachelor of Science in Fisheries is granted to students successfully completing a prescribed curriculum. Two options are presently offered: fishery biology and fishery management and administration. Modification of the curricular pattern is in progress. Its objective is to broaden the student's choice in contemporary areas of interest such as recreational fisheries, commercial fisheries, fish culture, invertebrate culture, water quality, environmental studies, fishery technology, and food processing. A Bachelor of Science with a major in fisheries is granted to students successfully completing an elective curriculum including at least 36 fisheries credits. A Bachelor of Science with a major in food science is granted to students successfully completing a specified core curriculum and appropriate electives. Further specialization within these areas may be undertaken in graduate studies as preparation for careers in teaching and research. In addition, training programs at the graduate level are offered in shellfish sanitation and biological aspects of water pollution.

College Facilities and Services

The College of Fisheries combines laboratory and classroom study with practical experience to offer the student the maximum preparation for a career in fisheries.

The College is located in the Fisheries Center, which was built in 1949 on the edge of the Lake Washington Ship Canal and enlarged in 1968. The Ship Canal connects the large freshwater body of Lake Washington with the salt water of Puget Sound.

The Center houses classrooms, laboratories, and general facilities, as well as several research organizations. The Fisheries-Oceanography Library, a branch library of research materials in fisheries, food science, oceanography, and wildlife sciences, is located in the Oceanography Teaching Building. With more than twenty thousand bound volumes and forty thousand technical reports, translations, reprints, and pamphlets, the library currently receives more than nine hundred serial publications. All the major abstract journals in the subject fields are also available, as are indexes to government research reports. Further material needed for research work is obtained from other library collections on the campus or by interlibrary loan.

The collection of fishes maintained by the College for research and teaching purposes contains over three hundred thousand cataloged specimens. These are mainly North Pacific marine fishes and northwestern freshwater fishes. However, the collection also includes extensive material from the Philippine Islands and the South Pacific, as well as representative collections from other parts of the world.

An annual run of several thousand salmon has been developed and is maintained at the College by the release of thousands of fingerlings each spring. Returning adults utilize a fish ladder to enter the College's experimental fish hatchery. The run is the basis for both instruction and research on the life cycle of Pacific salmon. Long-term studies are in progress on the effects of chronic irradiation of salmon during embryonic development, on dietary requirements of the young fish, and on the selective breeding of both salmon and rainbow trout. A salt water aquarium is also maintained by the College. Cold or warm recirculated sea water may be supplied to a battery of aquaria, as well as to a unique 2,000-gallon annular tank.

Other laboratories provide for the study of the physiology and behavior of fish. These include a separate room containing troughs and tanks in which water temperature may be maintained at various levels. Physiological facilities include equipment for surgical procedures and biochemical analysis of body fluids from both freshwater and marine fishes.

Equipment for the study of the effects of pollutants on fish is housed in a room where the temperature can be maintained at any level between 50° and 75° F. This

laboratory is supplied with water from several different sources and is used for both class demonstrations and research.

The College of Fisheries and the Fisheries Research Institute maintain an extensive library of computer programs for processing biological data. The Fisheries Analysis Center provides service in programming, card punching, and assisting with the use of the computer. The College maintains a 200-User Terminal to provide ready access to the larger computers in the Computer Center (CDC 6400 and Burroughs B5500). Faculty and staff of the College and of the Center For Quantitative Science have developed, with the cooperation of a multidisciplinary group of national and international experts, a comprehensive set of resource management teaching games. The games are being employed as "link trainers" in a number of courses to supplement traditional methods and to provide students with an opportunity to experience management decision making and to test their analytical skills on a variety of simulations of natural resources management problems.

A 67-foot diesel-powered boat, with cabin laboratory, is operated by the College. The vessel, the "Commando," is used for instruction and research in Lake Washington, Puget Sound, and the North Pacific Ocean. It is capable of trawling to a depth of 1,000 fathoms and is equipped for other types of fishing carried on in the North Pacific, as well as for handling a wide variety of experimental gear. There are facilities for marine microbiological studies and for technological investigations at sea on the M.V. "Commando." These include freezing and other refrigeration equipment and a small laboratory unit. Periodic training cruises introduce students to shipboard operations, including the use of various types of sampling equipment and acquaintance with a diversity of marine habitats.

The headquarters of one of the Pacific Coast's largest fishing fleets is located within two miles of the campus. Puget Sound, besides serving as a base for the world-famous salmon and halibut fisheries, has extensive bottom fish, commercial oyster, clam, crab, and shrimp operations. Sport fishing, particularly for trout, is available in the Northwest's many lakes and streams. Full advantage is taken of the proximity of these natural resources in research and teaching. A College of Fisheries field station at Big Beef Creek on Hood Canal provides additional opportunities for class field studies and research in stream and estuarine ecology. The stream contains established runs of chum and coho salmon and steelhead trout. Research facilities include a salmonid spawning channel, estuarine rearing ponds, and stream observation channels. Other field activities



are carried on at the College's Fern Lake station in Kitsap County where special attention is given to limnology and to the influence of the watershed on the lake.

Food Science facilities include separate, well equipped laboratories for food microbiology, food biochemistry, and food analysis. The food-processing and food-engineering laboratory complex is composed of several separate facilities containing equipment for teaching and experimental work in thermal processing (including canning), drying, smoking, and freezing foods. A particularly wide variety of low-temperature equipment and cold rooms is available.

A unique feature of the Food Science laboratories is the Cobalt-60 research food irradiator (Mark II). This radiation unit contains a source of about 30,000 curies strength. Food or other materials to be irradiated are loaded into metal containers which are moved mechanically into proximity to the source. Operational safety is ensured by a water shield. The containers are designed to provide for temperature and atmosphere control during irradiation.

Facilities for graduate studies in nutrition, including experimental work with vertebrates and invertebrates, are provided in the Institute for Food Science and Technology. Laboratory and shipboard facilities, including simulated sea-bed equipment, pressure bomb incubators, deep-sea sampling equipment, etc., are maintained in the Institute for Food Science and Technology for graduate studies in the field of Marine Microbiology.

In 1968 the University of Washington qualified for Sea Grant Institutional Support under the national Sea Grant College and Program Act which is administered by the National Oceanic and Atmospheric Administration. The College of Fisheries participates actively in this program, with research projects concerned with the living resource of the Northeastern Pacific and the changing environment of Puget Sound, with advisory services to industry, and with a variety of courses.

Fisheries Club

The students of the College of Fisheries formed the Fisheries Club in 1922. Since its beginning, the Club has been the center of extracurricular social and educational activities for the College students.

Meetings are held monthly, usually with prominent speakers from the various fields of the fishing industry. Frequently motion pictures are shown that deal with fisheries all over the world. In the past years the students have organized the Open House of the College of Fisheries. In addition the Club has an annual salmon

bake and other social gatherings. The Club has aided in procuring summer employment for many College of Fisheries students.

Related Activities

The University of Washington also contains within its College of Arts and Sciences a strong Department of Oceanography. This Department offers separate programs at undergraduate and graduate levels. Many students in the College of Fisheries take advantage of some of these courses.

The Division of Marine Resources has been established to coordinate and supplement the teaching, research, and development advisory service in marine science and engineering. It supervises the University's Sea Grant program that provides financial support to the University to develop and apply new knowledge in the management and utilization of marine resources. The Division is also responsible for the administration of the Friday Harbor Laboratories, located on San Juan Island in Puget Sound about eighty miles north of Seattle. These laboratories provide unique opportunities for research. A number of special courses are offered there during Spring and Summer Quarters.

Programs in the College of Fisheries also benefit from the fact that a regional office and laboratories of the National Marine Fisheries Service are located in the city of Seattle, as are branches of the Bureau of Sport Fisheries and Wildlife. In addition, the headquarters and research staff of the International Pacific Halibut Commission are located on the campus. The Washington State Department of Fisheries maintains offices in the Fisheries Center on campus, and there are also close contacts between the College and the research staff of both the State Department of Fisheries and the Game Department in Olympia. Many of the senior research members of these organizations, and a number from industry, are lecturers or affiliate faculty in the College.

The College of Fisheries is actively engaged in water resource management activities, with the faculty participating in interdisciplinary programs. The College is represented on the joint scientific committee of the state of Washington Water Research Center.

The Fisheries Research Institute

Staff

Robert L. Burgner, Director; Roy E. Nakatani, Assistant Director; Michael B. Dell, Larry G. Gilbertson, Allan C. Hartt, Edwin K. Holmberg, John S. Isakson, Victor K. Koski, Gary E. Lord, Ole A. Mathisen, William H. Parr, Jr., Patrick H. Poe, Phillip B. Roger, Donald E. Rogers, Brian J. Rothschild, Ernest O. Salo,

Dell H. Siler, Lynwood S. Smith, Quentin J. Stober, Richard B. Thompson, Richard E. Thorne, Gregory J. Tutmark, Richard W. Tyler

The Fisheries Research Institute is a research branch of the College of Fisheries. The College's larger grants and contracts in the field of fishery biology are handled by the Institute under the direction of both teaching and research faculty. Employment on contracts and grants is given first to graduate or undergraduate students, and many students who are working toward their graduate degrees on major fishery problems are being supported by contracts or grants.

The Institute was established in 1947 under the sponsorship of the Alaska Salmon Industry, Inc., and the research on salmon has continued and expanded under various industry, state, and federal contracts. Currently, the principal salmon studies are: (1) population dynamics and ecology of lakes producing sockeye salmon; (2) migrations and abundance of salmon on the high seas; (3) parasite studies; (4) ecology of nursery areas in pink and chum salmon streams; (5) regulation for optimum yield; (6) ecology of Puget Sound salmon stocks under natural and altered environmental conditions in fresh water and estuaries; (7) spawning channel rearing of chum salmon; and (8) a literature compilation. Much of this work on salmon is important to the United States section of the International North Pacific Fisheries Commission, and members of the Institute staff participate in the meetings of the Commission.

Research on problems other than salmon has been expanding rapidly. Current projects include several studies on oysters, parasites of fish, simulation of watershed management, marine ecology of an Aleutian island, ecological studies of a nuclear power site, and physiology and biochemistry of local marine fishes.

Under the International Biological Program's Coniferous Biome Study, financed by the National Science Foundation, the Cedar River-Lake Washington watershed is being investigated in part by the Institute's research personnel. During the first year, emphasis is being placed on invertebrate and fish populations. The Institute is also actively engaged in research and development of marine aquaculture under sponsorship of the Sea Grant Program. Marine organisms of Puget Sound, particularly salmonids, oysters, clams, and algae are used as test subjects.

The Institute maintains headquarters and laboratory facilities on the University campus and semipermanent field stations at five locations in Alaska. The campus headquarters and the Big Beef station are used for work in Washington. A large amount of field and laboratory

equipment is available, together with an extensive collection of fishery records from the Pacific Northwest and Alaska. Provision is made to conduct research on fishery problems in collaboration with other colleges and departments of the University, especially Engineering, Economics, Law, and Oceanography.

A floating laboratory and several vessels support the research activities. The "Kumtuks," a 99-foot floating physiology laboratory, is used in Puget Sound and nearby waters for the study of the biochemistry and physiology of fish. The motor vessel "Malka," 38 feet long, is used for inshore oceanographic and biological work in Washington and Alaska. The 32-foot "Iliamna," 30-foot "Sa-yak," and 30-foot "Kakhonak" are stationed on Lake Iliamna, the largest lake in Alaska and a major producer of sockeye salmon in North America.

Institute for Food Science and Technology

Staff

J. Liston, Director, G. Ivor Jones, Jack R. Matches, George M. Pigott, Victor M. Riddle, Frieda B. Taub

The Institute incorporates the teaching, research, and advising programs in Food Science into a single unit. The teaching program, which includes undergraduate and graduate instruction, is clearly described in other parts of this catalog.

The research activities within the Institute are concentrated in food microbiology, food safety, radiation processing of foods and seeds, food process engineering, biochemical processes in foods, marine microbiology, aquatic microecosystems, seafood technology, and nutrition. At least one specific research project, usually funded by federally derived grants from agencies such as the Public Health Service, Environmental Protection Agency, Atomic Energy Commission, and National Science Foundation, is active within each of these areas. These projects provide opportunities for research training for both undergraduate and graduate students in food science.

Industrial research is carried out on an *ad hoc* basis by the Institute at the request of food companies. Such research, which is paid for by the companies, is encouraged.

Advice and consultation, particularly on problems of seafood technology, are provided under formal and informal arrangements. A formally organized program operates under Sea Grant and is aimed at the seafood industry. It includes workshops, personal discussions and demonstrations, bulletin preparation, and the development of a seafood information service. The involve-



ment of students in these industry-contact programs is encouraged to the greatest extent possible, since it provides them with excellent experience in industrial conditions and operations.

The Laboratory of Radiation Ecology

Staff

Allyn H. Seymour, Director, Marion Chase, Rodney J. Eagle, Edward E. Held, Terrence A. Jokela, Raymond T. Lusk, Marguerite E. McAlpin, William R. Schell, Charles E. Vick, Arthur D. Welander

The Laboratory undertakes field studies and laboratory research programs related to radionuclides and to lead and mercury in the aquatic environment. The research programs are interdisciplinary in nature and involve faculty and graduate students from the College of Fisheries and from other colleges and departments on and off campus.

The Laboratory of Radiation Ecology, originally the Applied Fisheries Laboratory and later the Laboratory of Radiation Biology, was established in 1943 to investigate the effects of ionizing radiation on fish and other aquatic organisms and to relate these findings to the impact of the Hanford nuclear reactors on the Columbia River ecosystem. The field studies began with a radio-biological survey at Bikini Atoll in 1946 and, since that time, have included sites from the Arctic to the South Pacific. The laboratory programs complement the field studies and in part include the chemical and radiometric analyses of field samples. The laboratory is well equipped to handle radioactive materials, to prepare samples for radiometric analyses, and to measure trace quantities of radionuclides in biological and environmental samples.

The laboratory program also includes graduate student research. In general, the research programs of the graduate students who are appointed as research assistants are related to the ecology of radionuclides in aquatic environments. The graduate thesis and dissertation research programs at the present time include studies of the effects of tritium and other sources of ionizing radiation on the guppy, of various radionuclides on the eggs and larvae of oysters, of X rays on young salmon and trout, of temperature and ionizing radiation on primary productivity, and of tritium on the development of young fish. Studies of the environmental and biological distribution of alpha-emitting radionuclides in Lake Washington, Puget Sound, and coastal waters of Washington are other current research programs of the Laboratory that are of potential interest to graduate students.

The Washington Cooperative Fishery Unit

Staff

Richard R. Whitney, Unit Leader; Richard S. Wydoski, Assistant Leader

Cooperators in the Washington Cooperative Fishery Unit are the Department of the Interior's Bureau of Sport Fisheries and Wildlife, the Washington Department of Fisheries, Washington Department of Game, and the University of Washington. In addition, projects are being funded by the National Science Foundation as part of the International Biological Program in the Western Coniferous Biome, by the Sport Fishing Institute and by the Washington Fly Fishing Club. The funds are used by the Unit's staff and by graduate students to carry out research projects dealing with recreational fisheries. Currently underway are studies of (1) diseases of trout in hatcheries in Washington; (2) physical and biological effects of stream channelization; (3) behavioral interactions between juvenile coho salmon and steelhead trout; (4) effects of temperature and stream flow on the timing of steelhead migrations; (5) computer analysis of records of steelhead stocking relative to catch of returning adults; (6) benthic and littoral fishes of Lake Washington with potential recreational value; (7) the inland fishes of Washington; (8) growth and reproductive cycle of the soft-shell clam *Mya arenaria* in Puget Sound; and (9) management of Washington lakes for quality fishing (Lenice Lake). The Unit encourages participation in Fisheries 499 (Undergraduate Research).

Offices of the Cooperative Fishery Unit are in 106 Fisheries Center. Facilities of the cooperating agencies can be made available for use by students through the Unit.

Intercollege Programs With the

College of Forest Resources

QUANTITATIVE SCIENCE

Center for Quantitative Science in Forestry, Fisheries, and Wildlife

Staff

Gerald J. Paulik, Director, Bruce Bare, L. J. Bledsoe, Douglas G. Chapman, William H. Hatheway, Benjamin A. Jayne, Larry M. Male, Ole A. Mathisen, Donald A. McCaughran, Brian J. Rothschild, Gerard F. Schreuder, Todd W. Thorslund, Kenneth J. Turnbull, Donald F. Winter

The Center for Quantitative Science, sponsored by the Colleges of Fisheries and of Forest Resources, was established in 1968 in response to demands for specialized training in applied mathematics and for mathematical services by the students and faculties of the

two colleges. These demands have multiplied with increasing use of mathematical and statistical methods in the utilization and management of natural resources, and with the recent concern for environmental aspects of resource management. New developments in environmental monitoring and increasing public awareness of the Malthusian dilemma are continuing to generate a need for training in quantitative methodology.

The Center offers a comprehensive program of studies at the undergraduate level in applied mathematics and applied statistics. The primary areas of concentration are: (1) applied statistics with special emphasis on statistical inference and experimental design for the biological sciences; (2) operations research with particular focus on the utilization of renewable and nonrenewable natural resources; and (3) mathematical modeling of biological phenomena with specific orientation toward population dynamics. The Center also offers courses in applied mathematics designed especially for resource scientists. These areas are basic to the study of phenomena associated with transport of matter and energy in biological systems.

The Center's staff participates in the research activities of several academic units on the campus. These include, in addition to the two sponsoring colleges, the College of Engineering; the College of Arts and Sciences Departments of Atmospheric Sciences, Economics, Geography, Oceanography, and Political Science; and the Schools of Business Administration, Law, and Public Affairs. Typically, the Center staff participates on interdisciplinary teams studying complex systems.

Characteristic of the Center's research activities is a continuing emphasis on application of large-scale digital computers to various types of problems in the general area of quantitative ecology and resource management. Computerization makes possible the study of the total impact of exploratory management policies on simulated resource systems imbedded in rich backgrounds of interrelated physical, biological, and economic activities, and under numerous institutional constraints. Such computer-based models have been successfully employed in the management of forest stands, control of insect pests, management of a number of fish and aquatic mammal stocks, and in the acquisition of an understanding of the behavior of prey-predator systems.

The Center's graduate program is arranged to permit considerable flexibility, and opportunities exist for interdisciplinary training in two or more departments. Students may be enrolled either directly in an interdisciplinary program under supervision of a special com-

mittee appointed by the Graduate School, or they may major in one of the existing academic fields and tailor the program involving other fields to suit their individual needs and interests.

WILDLIFE SCIENCES

Committee

Donald E. Bevan; Chairman, Donald A. McCaughran, Ernest O. Salo, David R. M. Scott, and Richard Taber

The Colleges of Fisheries and of Forest Resources, through the Wildlife Sciences Committee, jointly administer an undergraduate degree program in Wildlife Sciences. This interdisciplinary program requires training in biological and quantitative science, as well as work in fisheries and forest resources. Students interested in the aquatic aspect of wildlife will register in the College of Fisheries. The student who obtains a Bachelor of Science with a major in Wildlife Sciences will be able to apply his training to management of wildlife resources and the related environment, or he may proceed to do graduate work for advanced management or fill a research position. An undergraduate interested in this field may find it desirable to major in a broader area (Fisheries, Forest Resources) and to select an elective concentration in Wildlife Sciences. Further information may be obtained by contacting a member of the committee.

Admission as Freshmen

In addition to the University requirements for entrance from high school, intermediate algebra and trigonometry are prerequisites for the first courses in mathematics included in all College of Fisheries curricula. Students who plan to enter this College can, and preferably should, complete these courses in addition to elementary algebra and plane geometry, which normally are the two units of college preparatory mathematics. Without this additional preparation, students will probably find it necessary to spend an extra quarter at the University in completing work for the baccalaureate degree. It is recommended also that while in high school students study chemistry, physics, and, if possible, biology.

Students who do not include two units of foreign language in their college preparatory programs will be required to achieve equivalent competence in a foreign language as a graduation requirement. This requirement may be fulfilled by successful completion in the University of 10 credits of a foreign language or by passing an appropriate placement examination.

Because an appropriate choice of high school electives serves to strengthen a student's preparation, the University will give this part of a student's record the same



careful attention it gives to other aspects of his qualifications.

Advising

After notification of admission by the University's Office of Admissions, and before registration, new students should visit or write to the College of Fisheries for help in planning their course programs. Academic and other counseling of fisheries students is given by faculty advisers in the College of Fisheries.

Admission with Advanced Standing

A qualified student in good standing at an accredited institution may apply for admission with advanced standing. Such an applicant is expected to have the same high school preparation as the student who enters as a freshman, or equivalent introductory college courses, and a college grade-point average that meets the standard specified for the University. Students who plan to complete their first two years of college work at a junior college should consult their advisers concerning community college courses that are acceptable to the College of Fisheries. These courses are listed in the booklet *University of Washington Community College Transfer Programs*. The latest issue should be consulted.

Admission to the Graduate Program

Basic requirements for admission to the graduate program in the College of Fisheries are a bachelor's degree from an institution of recognized standing, approval of the College of Fisheries, and approval of the Graduate School. Preference will be given to those with strong backgrounds in the basic sciences and a grade-point average of 3.00 or better. The Graduate Record Examination is required of all graduate students and should be taken prior to admission. A student admitted with a bachelor's degree is accepted initially for a Master of Science degree program.

The College of Fisheries evaluates applications for admission to the Graduate School and recommends the most highly qualified applicants for acceptance. The Graduate School admits only those numbers of recommended applicants that will not exceed the College's enrollment quota, and some qualified students may be denied admission because of insufficient space and facilities.

Students not wishing full graduate status may be admitted as nonmatriculated or fifth-year students. Non-matriculated students may carry out approved programs of study that do not lead to a degree and that usually require less than one year for completion. Alternatively, fifth-year students may work toward a second bachelor's degree.

Financial Aids

The College offers financial assistance to undergraduates and graduates through industrial and private scholarships. Interested students should contact the Office of Financial Aids, 170 Schmitz Hall. Qualified graduate students may obtain financial assistance through governmental fellowships, National Science Foundation, National Aeronautics and Space Administration, and Public Health Service traineeships, research assistantships, or teaching assistantships. Students seeking such aid should apply at the office of the dean.

Employment

The College of Fisheries assists its students to obtain summer employment and also helps them to secure permanent employment when they graduate. A number of Research Assistantships associated with grant and contract research are available for graduate students in the College. The Fisheries Research Institute normally hires students for summer work in the field and usually has several part-time positions available during the school year. Similar employment opportunities are frequently available with governmental fisheries, game management, or water research organizations on or near the campus and elsewhere in the Northwest. When employed by one of these agencies a graduate student may carry out research that upon approval may be used to satisfy the thesis requirement.

The specific fishery orientation of the College program is supported by a diversity of subject interests among the regular and affiliate faculty, and by a wide range of equipment and physical facilities. These factors, together with active research programs on and off campus, put graduate students in a very favorable position to pursue programs leading to advanced degrees.

Undergraduate Programs

The College provides two baccalaureate programs in fishery biology and one food science program leading to the degree of Bachelor of Science with a major in Food Science. Specific requirements for these programs are detailed below.

GENERAL REQUIREMENTS

Students should apply for bachelor's degrees during the first quarter of the senior year. If not more than ten years have elapsed since the date of a student's entry into the College, he may choose to graduate under the requirements set out in either the bulletin published most recently prior to the date of his entry or that published prior to his anticipated date of graduation; provided that when, in the opinion of the faculty of the

College, substantial changes have been made in the curriculum since the student's entry, the student's choice shall be subject to the approval of the faculty or dean.

Disapproval of the student's choice shall be faculty action and subject to the procedures of the Faculty Code. All responsibility for fulfilling graduation requirements shall rest with the student concerned.

The University credit requirement for graduation is 180 academic credits. At least 60 credits must be in courses numbered 300 and above. A total of at least 36 credits in fisheries and food science is required. For graduation, students must have a cumulative average of 2.00 (C) in fisheries and food science courses and an overall average of 2.00 (C) in all courses. Advanced ROTC courses do not count as upper-division credit, and no more than 18 credits in advanced ROTC courses may be counted toward graduation.

Students who transfer from other institutions to the College of Fisheries are normally required to earn at least 10 credits in their major subject in this College.

FISHERY BIOLOGY

Adviser

A. C. DeLacy
248 Fisheries Center

BACHELOR OF SCIENCE IN FISHERIES

A student may select areas of specialization within the College, but all programs must include basic courses in biology or zoology, chemistry, English, mathematics, and statistics, and 36 credits must be earned in fisheries. In his junior and senior years, a student will be able to take the more specialized courses appropriate to his degree program. Prospective students are invited to inquire about areas of undergraduate specialization. Such areas include aquaculture, commercial fisheries, environmental studies, fishery technology, food processing, recreational fisheries, and water quality. Additional information on the prescribed curriculum may be obtained from the office of the College of Fisheries.

BACHELOR OF SCIENCE

An elective curriculum is available for students desiring a Bachelor of Science with a major in fisheries. The student must complete 36 credits in fisheries and sufficient electives to meet University graduation requirements. This degree is specifically intended for students desiring a strong minor (minimum of 30 credits) in a related field such as biometrics, economics, vertebrate or invertebrate physiology, microbiology, oceanography, genetics, or chemistry. The choice of electives is subject to approval by the College.

FOOD SCIENCE

Adviser

John Liston
221 Fisheries Center

BACHELOR OF SCIENCE

The food science program provides a curriculum leading to a Bachelor of Science degree with a major in Food Science. It is recommended that the entering student will have completed mathematics to include advanced algebra and trigonometry, and laboratory science to include chemistry and physics.

The normal program to be followed is outlined below. At least 15 credits in humanities or social sciences, including English, and 10 credits in biological sciences should be included.

More advanced courses may be substituted for listed requirements in basic science areas. (See recommended courses further on in this section.)

CURRICULUM IN FOOD SCIENCE

First Year

FIRST QUARTER		CREDITS
CHEM 140	General	4
MATH 105	Elementary Functions	5
Electives		6
		15

SECOND QUARTER

ENGL 171	College Writing	3
CHEM 150	General	4
CHEM 151	General Chem. Laboratory	2
Electives		6
		15

THIRD QUARTER

MATH 157	Elements of Calculus	4
CHEM 160	General	4
CHEM 170	Qualitative Analysis	3
Electives		4
		15

Second Year

FIRST QUARTER

CHEM 231	Organic	3
CHEM 241	Organic Chem. Laboratory	2
PHYSICS 114	General	4
Electives		6
		15

SECOND QUARTER

CHEM 232	Organic	3
CHEM 242	Organic Chem. Laboratory	2
PHYSICS 115	General	4
Electives		6
		15

THIRD QUARTER

CHEM 221	Quantitative Analysis	5
Q SCI 281	Elem. Stat. Meth.	5
PHYSICS 116	General	4
Electives		1
		15

Third Year

FIRST QUARTER

MICRO 400	Fund. Bacteriol.	3
PC EH 440	Water & Waste San.	4
Electives		8
		15



SECOND QUARTER		CREDITS
PC EH 441	Milk and Food San.	4
FD SC 380	Prin. Fish. Tech.	3
BIOC 405	Intro. Biochem.	5
CHEM 350	Elem. Phys. Chem.	3
		<hr/> 15

THIRD QUARTER		
FD SC 481	Intro. Food Tech.	5
BIOC 408	Intro. Biochem. Lab.	3
Electives		7
		<hr/> 15

Fourth Year

FIRST QUARTER		
FD SC 482	Prin. Food Anal. I	5
FD SC 484	Prin. Food Proc. I	5
FD SC 498	Undergrad. Thesis	2
FISH 495	Intro. Fish. and Food Sci. Lit.	2
Electives		1
		<hr/> 15

SECOND QUARTER		
FD SC 483	Prin. Food Anal. II	5
FD SC 485	Prin. Food Proc. II	5
FD SC 498	Undergrad. Thesis	2
Electives		3
		<hr/> 15

THIRD QUARTER		
FD SC 486	Deteriorative Proc. Foods	5
FD SC 498	Undergrad. Thesis	2
Electives		8
		<hr/> 15

RECOMMENDED COURSES

Accounting 210, 220 (Fundamentals of Accounting); Biochemistry 440*, 441*, 442*, 444* (Molecular Biology and Laboratory); Biology 210, 211, 212 (Introductory Biology); Botany 113 (Elementary Plant Classification), 220 (The Plant Kingdom), Chemistry 235*, 236* (Organic Chemistry), 426 (Instrumental Analysis); Fisheries 101 (Introduction to Fisheries Science), 379 (Fisheries of the World), 405 (Economically Important Mollusca), 406 (Economically Important Crustacea); Food Science 378 (Principles of Fishing Gear and Vessel Development), 381 (Environment, Food, and Technology), 487 (Principles of Food Analysis III); Engineering 140 (Fundamentals of Problem Solving); Home Economics 300, 307 (Nutrition); Marketing 301 (Marketing Concepts); Mathematics 114 (Elementary Computer Programming), 124, 125, 126 (Calculus with Analytic Geometry), 374 (Principles of Digital Computers and Coding); Microbiology 430 (Microbial Metabolism); Philosophy 120 (Introduction to Logic), 460 (Philosophy of Science); Physics 117*, 118*, 119* (General Physics Laboratory), 121* (Mechanics), 122* (Electromagnetism and Oscillatory Motion), 123* (Waves); Operations and Systems Analysis 301 (Principles of Operations Analysis); Quantitative Science 291, 292 (Analysis for Biologists), 382, 383 (Statistical Inference in Applied Research).

Graduate Programs

Graduate Program Adviser

Lynwood S. Smith

204 Fisheries Center

Graduate students in the College of Fisheries are required to take a minor or a minimum number of supporting courses in selected departments of the University. The nature and number of such courses are determined by the student's Supervisory Committee. All graduate students must complete 6 credits (three quarters) in Fisheries 520.

MASTER OF SCIENCE

At least one year of approved study, with the completion of a research project, leads to the master's degree.

A minimum of 45 upper-division or graduate credits must be earned, including 18 credits in Fisheries 700 or Food Science 700, 6 credits in Fisheries 520 or Food Science 521, and 3 additional credits in courses numbered 500 or above. Requirements must be completed in no more than four years.

The foreign language requirement for the master's degree will be satisfied by fulfillment of any one of the following:

1. One year of foreign language in college with passing grades
2. Independent Study courses equivalent to item 1. above
3. Summer intensive course at University of Washington with passing grades
4. E.T.S. examination with passing grade
5. Two years of foreign language in high school with passing grades
6. Completion of secondary school education in a language other than English
7. Passing grade in present advanced translation examination as established by College of Fisheries
8. Advanced proficiency demonstrated by (a) oral or (b) oral and written examination administered by qualified College of Fisheries faculty or staff member

DOCTOR OF PHILOSOPHY

Students must complete at least three years of graduate study including a dissertation. Credits earned for a master's degree may be applied toward the doctor's degree. Preparation of a Ph.D. dissertation requires registration for 36 credits in Fisheries 800. Requirements must be completed in no more than seven years.

The foreign language requirement for the Ph.D. degree will be satisfied by the fulfillment of items 7. or 8. on the above list, plus fulfillment of any one of the first six items.

For further information, see the *Graduate Study* section of this catalog.

* Students intending to proceed to graduate study are advised to take these courses.



FOREST RESOURCES

Dean

James S. Bethel
206 Anderson Hall

Associate Deans

Stanley P. Gessel, Benjamin A. Jayne

Professors

James S. Bethel, C. Frank Brockman (emeritus), Benjamin S. Bryant, Charles H. Driver, Harvey D. Erickson, Howard S. Gardner, Stanley P. Gessel, Bror L. Grondal (emeritus), Benjamin A. Jayne, Gordon D. Marckworth (emeritus), Robert E. Martin, Gerald J. Paulik, J. Kenneth Pearce (emeritus), James C. H. Robertson (emeritus), K. V. Sarkanen, Walter H. Schaeffer, David R. M. Scott, Grant W. Sharpe, George Stenzel, Richard D. Taber, David P. Thomas

Associate Professors

G. Graham Allan, Dale W. Cole, Barney Dowdle, Leo J. Fritschen, Robert I. Gara, William H. Hatheway, Bjorn F. Hruthfiord, Lawrence Leney, Hilton Lysons, Gerard F. Schreuder, Reinhard F. Stettler, Kenneth J. Turnbull, Fiorenzo C. Ugolini, J. Alan Wagar, David D. Wooldridge

Assistant Professors

B. Bruce Bare, Donald R. Field, John C. Hendee, Todd W. Thorslund, Thomas R. Waggener, A. Richard Weisbrod, Boyd C. Wilson

Research Assistant Professors

William A. Atkinson, Hans Riekerk

Instructor

Garrett A. Smathers

Lecturers

Reid M. Kenady, Kenneth M. Macdonald, Brian O. Mulligan, Joseph A. Witt

Studies in Forest Resources include the application of the natural and social sciences to the uses of forest, range, and recreational lands and the related technological and managerial processes applicable to the production and provision of forest-based goods and services. The many aspects of forestry-related subjects range from the development of ecological and environmental principles governing the dynamics of biotic population and methods by which they can be controlled, to the formulation and application of management techniques to both private and public lands as well as manufacturing and production processes.

The College of Forest Resources was founded in 1907, when forestry education in the United States was in its infancy. Since then, the College has evolved to provide instruction in a substantial array of natural sciences, social sciences, and humanities, both as applied in the several professional areas in forestry and as subjects for advanced study and research.

The University of Washington is located centrally in one of the world's most important forest regions; hence, unique opportunities are available to integrate the instruction and research programs with management of



nearby public and private forest land, extensive and diverse industrial facilities, and numerous research centers.

Undergraduate curricula of the College of Forest Resources emphasize a thorough and appropriate academic preparation during the first two years, followed by one of several professional upper-division programs, dependent on the individual student's objectives. There are elective possibilities in all curricula. Opportunities for independent study and research are available. Because of the modest size of the undergraduate enrollment, an atmosphere of close association between students and faculty members exists in classroom and laboratory. The diversity of educational experiences and the superior facilities found only in a large university are also available to forest resources students at the University of Washington.

Graduate programs in forest resources are designed to accommodate a wide range of educational objectives. It is possible either to concentrate upon advanced professional training or upon appropriate science or social science disciplines that are related to forestry in special or underlying roles.

The College of Forest Resources is accredited by the Society of American Foresters. It offers curricula leading to the degree of Bachelor of Science in Forest Resources and, through the Graduate School, the Master of Forest Resources, Master of Science, and Doctor of Philosophy degrees.

INSTRUCTION

Associate Dean of Instruction
Benjamin A. Jayne
107C Anderson Hall

Undergraduate Study

In addition to meeting the University's general admission requirements for all undergraduates, those students planning to enter the College of Forest Resources should have completed the following: Algebra III (intermediate) and a course in trigonometry. Prospective students should also complete at least one unit of biological science and one unit of physical science while in high school.

A choice of high school electives in the natural sciences, social sciences, and humanities serves to strengthen a student's preparation for University study. This part of his record receives the same careful attention as other aspects of his qualifications for admittance to the University.

The College of Forest Resources offers seven undergraduate curriculums. An additional means of implementing the individual student's educational objectives is possible through the use of elective credits available in all curricula. Elective credits can be taken in the College of Forest Resources and in other schools and colleges of the University. Students are encouraged to take elective credits outside the College of Forest Resources in order to broaden their education beyond that provided in the specialized curricula.

Students in all curricula must meet general requirements of the University and the College. General requirements for the bachelor's degree include scholarship, minimum credits, and senior-year residence. Specific curriculum requirements are described below under the Division program.

Undergraduate programs offered by the College are administered by three divisions. The Management and Social Sciences Division administers programs in forest management, outdoor recreation, and forest engineering. The Biological Sciences Division administers programs in forest sciences and wildlife sciences. The Wood and Paper Division administers programs in wood and fiber science and in pulp and paper technology.

The advising of students is the responsibility of the divisions. Consequently, students entering the College enter one of the divisions at the time of their enrollment. Some students may wish to delay their choice of curriculum into the first year of study until such time as they become acquainted with the various programs of the College. Due to the similarity of the curriculums administered within the divisions, selection of a particular curriculum can be delayed into the second year of study. Changes of curriculum or Division during upper-division study may delay completion of the degree.

MANAGEMENT AND SOCIAL SCIENCES DIVISION

Chairman

Thomas R. Waggener
123J Anderson Hall

Programs in the Management and Social Sciences Division are oriented toward professional careers in the management of forested lands. Common emphasis in all programs is on the application of the social, physical, and biological sciences to forest resource management and allocation problems. The curriculum in Forest Management is designed to prepare the student to integrate the management of forest land for the production of a variety of goods and services consistent

with ownership objectives. The curriculum in Forest Engineering provides specialized concentration in the planning, layout, and supervision of transportation and timber harvesting systems. The curriculum in Outdoor Recreation is oriented towards the specialized use of forested lands for recreational purposes, and focuses on the planning and management of outdoor recreational facilities as well as the interpretation of natural phenomena.

MANAGEMENT AND SOCIAL SCIENCES DIVISION FOREST MANAGEMENT CURRICULUM

Lower-division Requirements

COURSES	CREDITS
<i>Forest Resources</i>	
FOR R 100 Intro. to For. R. Mgt.	5
FOR R 201-208	to total 4

Mathematics^a

MATH 105 Elementary Functions	5
Q SCI 281 Stat. Method	5

Physical Sciences

Introductory Chem	5
Introductory Phys	5
Elective	5

Biological Sciences^a

BIOL 101-102 General Biology	10
BOT 220 Plant Kingdom	5

Social Sciences

ECON 200 Intro. to Economics	5
ENGL OR HSS ^b	5
Elective ^c	10

<i>Earth Science^d</i>	5
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<i>Free Electives</i>	16
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Upper-division Requirements

Forest Resources

FOR R 300 Dendrology	5
FOR R 320 Forest Ecology	5
FOR R 340 Forest Surveying	5
FOR R 360 Forest Measurements	5
FOR R 460 For R Management I	5
FOR R 468 For R Management II	5
FOR R 469 For R Management III	5

Forest Resources Electives^a

Group II	9
Group II or III	6
Group IV	9
Group IV or V	6

<i>Free Electives</i>	25
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^a Or equivalent courses

^b Or Biology 210, 211, 212

^c From English 111, 121, 171, 172; Engineering 130, 131; or HSS 302, 310, 322, 410

^d From Social Sciences selection of the College of Arts and Sciences Distribution List

^e From Geological Sciences 101, 205, 210 or Atmospheric Sciences 101, 201, 301

^f From approved group listings

FOREST ENGINEERING CURRICULUM

Lower-division Requirements

COURSES	CREDITS
<i>Forest Resources</i>	
FOR R 100 Intro. to For. R. Mgt.	5
FOR R 201-208	to total 4

COURSES

Mathematics

Q SCI 291, 292 OR MATH 157	4 or 6
MATH 205 OR Q SCI 391	3
MATH 281 OR Q SCI 281 OR ECON 281	5

Physical Sciences

PHYS 114, 117 and 115, 118 General	10
CHEM 101 General	5

Biological Sciences

Introductory Biology	5
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Social Sciences

ECON 200 Intro. to Economics	5
ENGL, HSS OR ENGR ¹	3
Electives	10

Engineering Sciences

ENGR 161 Plane Surveying	3
Computer Programming ^a	2

<i>Earth Science^a</i>	5
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<i>Free Electives</i>	20
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Upper-division Requirements

Forest Resources

FOR R 300 Dendrology	5
FOR R 304 Wood: Properties and Best Use	3
FOR R 320 Forest Ecology	5
FOR R 360 Forest Measurements	5
FOR R 440 Construction	4
FOR R 441 Forest Engineering	5
FOR R 442 Fin. Anal. Log. Equip. Opr.	4
FOR R 443 Safety in Forest Industries	1
FOR R 446, 447, 448, 449 Field Studies	15
FOR R 460 For R Management I	5

Civil Engineering

CEIC 310 For Highway Location	5
CEIC 415 Photogrammetry	3
CEIC 417 Cadastral Surveys	3
Electives ^d	6

Business Administration and Economics

<i>Electives^d</i>	9
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<i>Statistics and Operations and Systems Analysis Electives^d</i>	6
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<i>Free Electives</i>	11
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¹ From English 111, 121, 171, 172 or Engineering 130, 131, or HSS 302

² From Engineering 141, 215, 315 or Quantitative Methods 200

³ From Geological Sciences 101, 205

⁴ From approved listing

OUTDOOR RECREATION CURRICULUM

Lower-division Requirements

COURSES	CREDITS
<i>Forest Resources</i>	
FOR R 100 Intro. to For. R. Mgt.	5
FOR R 201-208	to total 4

Mathematics^a

MATH 105 Elementary Functions	5
Q SCI 281 Stat. Method	5

Physical and Earth Sciences

Intro Chem or Phys	5
Elective	5

Biological Sciences^a

BIOL 101-102 General Biology	10
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Social Sciences

ECON 200 Intro. to Economics	5
SOC 110 Survey of Sociology	5
Elective ^a	5



COURSES	CREDITS
<i>English</i> ¹	
ENGL 171, 172 College Writing	6
<i>Restricted Electives</i> ²	9
<i>Humanities Electives</i>	10
<i>Free Electives</i>	11

Upper-division Requirements**Forest Resources**

FOR R 320 Forest Ecology	5
FOR R 340 Forest Surveying	5
FOR R 350 Field Studies in Outdoor Rec.	3
FOR R 351 Intro. to Outdoor Recreation	5
FOR R 353 Prin. of Natural History Interp.	3
FOR R 354 Intro. to Mgt. of Rec. Areas	3
FOR R 355 Intro. Plan. Rec. Areas	3
FOR R 453 OR 452 OR 455	2-5
FOR R 459 Case Studies in Outdoor Rec.	5

*Forest Resources Electives*⁴ 20-23

Free Electives 33

¹ Or equivalent courses

² From Anthropology 100, Psychology 100, Political Science 101 or 102

³ From Natural Sciences, Social Sciences, and English courses

⁴ From approved listing

BIOLOGICAL SCIENCES DIVISION

Chairman

Leo J. Fritschen

101 Winkenwerder

The programs administered by the Biological Sciences Division provide an opportunity to prepare for a career in one of the sciences related to forestry. The forest sciences curriculum is designed for students who are interested in the scientific aspects of the natural resources in forestry and the environment. The curriculum in wildlife sciences is concerned with applications of biological and social sciences to the conservation and manipulation of wildlife populations. Both curricula provide flexibility for developing greater depth in scientific disciplines than is ordinarily possible in professional curricula. Because of the additional opportunity to concentrate in a particular area of science, both curriculums are well suited for students who anticipate graduate studies.

BIOLOGICAL SCIENCES DIVISION FOREST SCIENCE CURRICULUM

Lower-division Requirements

COURSES	CREDITS
<i>Forest Resources</i>	
FOR R 100 Intro. to For. R. Mgt.	5
FOR R 201-208	to total 4
<i>Mathematics</i> ¹	
Q SCI 281 Stat. Method	5
Q SCI 291, 292 Anal. for Biologists	6

COURSES	CREDITS
<i>Physical Sciences</i> ²	
Introductory Chemistry and Physics	10
<i>Biological Sciences</i> ³	10
<i>Social Sciences and Humanities</i> ³	15
<i>Science Electives</i> ⁴	15
<i>Earth Sciences</i> ⁵	5
<i>Free Electives</i>	15

Upper-division Requirements

<i>Forest Resources Electives</i> ⁶	30
<i>Mathematics, Quantitative Science, Physical Science</i> ²	9
<i>Biological Sciences</i> ³	9
<i>Social Sciences and Humanities</i> ³	9
<i>Free Electives</i>	33

¹ Or equivalent courses

² To be selected with approval of adviser

³ From Social Sciences and Humanities selections of the College of Arts and Sciences Distribution List

⁴ From Natural Sciences, Social Sciences, and Humanities

⁵ From Geological Sciences 101, 205, 311 or Atmospheric Sciences 101, 201, 301

⁶ From approved listing

WILDLIFE SCIENCES CURRICULUM**Lower-division Requirements**

COURSES	CREDITS
<i>Biological Sciences</i>	
BIOL 210, 211, 212 Intro. Biology ¹	15
<i>Physical Sciences</i>	
CHEM 140 General Chemistry	4
CHEM 150, 151 General Chem. and Laboratory	6
CHEM 231, 232 Organic Chemistry ²	6

Mathematics

MATH 105 Elementary Functions	5
Q SCI 291, 292 Anal. for Biologists	6
Q SCI 281 Stat. Method	5

Social Sciences

ECON 200 Intro. to Economics	5
ECON 201 Intro. to Microeconomic Theory	5
Social Science Electives ³	15
ENGL 271, 272 Adv. Expository Writing ⁴	6

Earth Sciences

GEOL 205 Intro. to Geological Sciences	5
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Fisheries

FISH 240 Digital Computers to Bio. Probs.	4
<i>Free Electives</i>	1-3

Upper-division Requirements**Forest Resources**

FOR R 310, 320, 322 ⁵	13
FOR R 329 Microclimatology	3

Quantitative Science

Q SCI 456 Math. Models in Population Biol.	4
Q SCI 457 Mgt. Exploited Animal Populations	4
Q SCI 382, 383 Stat. Infer. in Appl. Rsch.	10

Biological Sciences

ZOOL 362, 464 OR 465	5
BIOL 472 OR BOT 450	3

Fisheries

FISH 401 ⁶	5
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Social Sciences

ECON 435 Nat. Res. Util. and Public Policy	5
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COURSES	CREDITS
<i>Wildlife Sciences</i>	
WLF S 350 Survey of Wildlife Biol. and Conserv.	3
WLF S 401 Wildlife Biology	3
WLF S 402 Wildlife and Man	3
WLF S 403 Wildlife and Land Use	3

Approved Electives 26

¹ Or Biology 101-102 and Botany 113 or 220

² Or Physics 114, 115

³ From approved list

⁴ Or Engineering 130, 131

⁵ Or Forest Resources 323, 324, 325

⁶ Zoology 409 or 458 may be substituted

WOOD AND PAPER DIVISION

Chairman

Kyosti V. Sarkanen

296 Bloedel Hall

Programs in the Wood and Paper Division focus on use of wood as a raw material for the many products derived from the forest. This orientation can be toward professional aspects of forest-based industries or specialized scientific fields associated with wood utilization. Study in Pulp and Paper Technology emphasizes principles related to chemical and mechanical production of wood pulp, manufacture of paper, and management of firms in the pulp and paper industry. Students completing this program may return for a fifth year and complete requirements for the Bachelor of Science in Chemical Engineering degree. The wood and fiber science curriculum provides in-depth study of the scientific disciplines related to careers in the forest products industries. Through selection of appropriate elective courses, the student can prepare for either employment in the wood products industries or for graduate study in the wood sciences.

WOOD AND PAPER DIVISION

PULP AND PAPER TECHNOLOGY CURRICULUM

Lower-division Requirements

COURSES	CREDITS
<i>Forest Resources</i>	
FOR R 101 Intro. to Wood and Paper	1
<i>Mathematics</i>	
MATH 105 Elementary Functions	5
MATH 124, 125, 126 Calc. with Anal. Geom.	15
MATH 238 Elem. of Differential Equations	3
Q SCI 281 OR MATH 281 Stat. Method	5
MATH 327 Adv. Calculus	3
<i>Physical Sciences</i>	
CHEM 140 General Chemistry	4
CHEM 150, 151 General Chemistry and Laboratory	6
CHEM 160 General Chemistry	4
CHEM 231, 232 Organic Chemistry	6
CHEM 241 Organic Chemistry Laboratory	2
PHYS 121, 122, 123 ¹	12
<i>Biological Sciences</i>	
BOT 110 Plants and Man's Environment	5
<i>Social Sciences</i>	
ENGL 171, 172 College Writing	6
ECON 211 General Economics	3

COURSES	CREDITS
<i>Engineering</i>	
ENGR 141 Computer Appl. to Engr. Probs.	4
ENGR 260 Thermodynamics	4

Upper-division Requirements

<i>Forest Resources</i>	
FOR R 323, 324 Forest Biology I, II	6
FOR R 400 Wood and Fiber Structure	5
FOR R 401 Physics of Wood & Fiber Comp.	4
FOR R 403 Fibrous Structure & Rheology I	3
FOR R 406 Wood Chemistry I	3
FOR R 407 Wood Chemistry I Laboratory	2
FOR R 464 Econ. of For. Prod. Industries	3
FOR R 476, 477 Pulp & Paper Tech. & Laboratory	5
FOR R 485 Undergrad Research	3
FOR R 488 Polymer Chemistry	3

Physical Sciences

CHEM 350, 351 Elem. Physical Chem.	6
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Engineering

CH E 210 Material and Energy Balances	4
CH E 330 Transport Proc. Prin. I	4
CH E 340 Transport Proc. Prin. II	4
CH E 436 Chem. Engr. Lab. I	3

Humanities and Social Sciences Electives 25

Free Electives 9

¹ Or Physics 114, 115, 116 with adviser's approval

WOOD AND FIBER SCIENCE CURRICULUM

Lower-division Requirements

COURSES	CREDITS
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Forest Resources

FOR R 101 Intro. to Wood and Paper	1
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Mathematics

MATH 105 Elementary Functions	5
MATH 124, 125, 126 Calc. with Anal. Geom.	15
Q SCI 281 OR MATH 281 Stat. Method	5

Physical Sciences

CHEM 140 General Chemistry	4
CHEM 150 General Chemistry	4
CHEM 231, 232 Organic Chemistry	6
PHYS 121, 122, 123 ¹	12

Biological Science

BOT 110 Plants and Man's Environment	5
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Social Sciences

ENGL 171, 172 College Writing	6
ECON 211 General Economics	3

*Electives*² 27

Upper-division Requirements

Forest Resources

FOR R 323, 324 Forest Biology I, II	6
FOR R 400 Wood and Fiber Structure	5
FOR R 401, 402 Physics of Wood & Fiber Comp.	8
FOR R 403 Fibrous Structure & Rheology I	3
FOR R 406 Wood Chemistry I	3
FOR R 407 Wood Chemistry I Laboratory	2
FOR R 408 Wood Chemistry II	3
FOR R 464 Econ. of For. Prod. Industries	3
FOR R 485 Undergraduate Research	3
FOR R 488 Polymer Chemistry	3

Electives

Science and Professional ³	18
Electives ²	30

¹ Or Physics 114, 115, 116 with adviser's approval

² A minimum of 27 credits must be taken in humanities and/or social sciences

³ At least 6 credits must be laboratory



INTERCOLLEGE PROGRAMS WITH THE COLLEGE OF FISHERIES

(Quantitative Science)

Gerald J. Paulik

215 Pacific Annex 2

The Center for Quantitative Science in Forestry, Fisheries, and Wildlife functions as a fourth division in the College of Forest Resources. The Center was established in 1968 in response to demands for specialized training in applied mathematics and for mathematical services by students and faculties of the two colleges. These demands have multiplied with increasing use of mathematical and statistical methods in the utilization and management of natural resources, and with the recent concern for environmental aspects of resource management.

The Center offers a comprehensive program of studies in applied mathematics and applied statistics at the undergraduate level. The primary areas of concentration are: (1) applied statistics with special emphasis on statistical inference and experimental design for the biological sciences; (2) operations research, with particular focus on the utilization of renewable and non-renewable natural resources; and (3) mathematical modeling of biological phenomena with specific orientation toward population dynamics. The Center also offers courses in classical applied mathematics and physics designed especially for resource scientists. These areas are basic to the study of phenomena associated with transport of matter and energy in biological systems.

The staff of the Center participates in the research activities of several academic units on campus. Typically, the Center staff participates as part of interdisciplinary teams studying complex systems.

One of the characteristics of the research activities of the Center staff is a continuing emphasis on application of large-scale digital computers of various types to problems in the general area of quantitative ecology and resource management. Computerization makes possible the study of the total impact of exploratory management policies on simulated resource systems imbedded in rich backgrounds of interrelated physical, biological, and economic activities, and under numerous institutional constraints. Such computer-based models have been successfully employed in the management of forest stands, control of insect pests, management of a number of fish and aquatic mammal stocks, and in the acquisition of an understanding of the behavior of prey-predator systems.

The graduate program of the Center is arranged to permit considerable flexibility, and opportunities exist

for interdisciplinary training in two or more departments. Students may be enrolled either directly in an interdisciplinary program under supervision of a special committee appointed by the Graduate School, or they may major in one of the existing academic fields and tailor the program involving other fields to suit their individual needs and interests.

WILDLIFE SCIENCES

Chairman

Donald E. Bevan

352 Fisheries Center

The Colleges of Fisheries and of Forest Resources, through the Wildlife Sciences Committee, jointly administer an undergraduate degree program in Wildlife Sciences. This interdisciplinary program requires training in biological and quantitative science as well as work in fisheries and forest resources. The student in Forest Resources who obtains a Bachelor of Science in Forest Resources with a major in Wildlife Sciences will be able to apply his training to management of wildlife resources and the related environment, or he may proceed to do graduate work for advanced management or to fill a research position. An undergraduate interested in this field may find it desirable to major in one of the other curriculums of the College where he may select an elective concentration in Wildlife Sciences. Further information may be obtained by contacting the Associate Dean of Instruction, 107C Anderson Hall.

HONORS PROGRAM

The Honors Program in the College of Forest Resources provides opportunities in all curricula for students who qualify to develop their special interests to the fullest extent. Opportunities enjoyed by honors students include accelerated and more challenging programs and special seminars; flexibility in selecting interdisciplinary course programs; possibility of receiving financial assistance; special personal contact with individual faculty members; and the chance to gain experience in research. The Honors Program is directed by two members of the College faculty.

Freshmen may be granted an honors status on the basis of performance in high school and in college placement examinations, and other pertinent information. Other students, including transfer students, may qualify on the basis of having demonstrated the necessary academic ability at the university level. Maintenance of a minimum grade-point average of 3.00 is mandatory for all honors students. During his senior year, the honors student is required to complete a spe-

cial research project or independent literature study and to present his findings in the form of an honors senior thesis. Alternatively, the senior honors student can elect to sit for a special honors examination.

Participation in the Honors Program is of particular value to students contemplating graduate studies. Those successfully completing this program receive the Bachelor of Science in Forest Resources with Honors.

SCHOLARSHIPS AND FINANCIAL AIDS

Undergraduate and graduate scholarships, fellowships, assistantships, and awards, specifically for students in the College of Forest Resources may contact the Office of Financial Aids, 170 Schmitz Hall, for information concerning these awards. Information is also available from the Associate Dean of Instruction, 170C Anderson Hall.

The Washington Pulp and Paper Foundation, Inc. provides scholarships for students preparing for careers in the pulp and paper industry. Awards are based upon professional promise, scholastic achievement, and financial need. The Foundation is supported by companies of the pulp and paper industry and supplier companies.

GRADUATE STUDY

Graduate Program Adviser

Robert I. Gara

Forest Sciences Laboratory

Graduate programs are offered by the faculty in Forest Resources, leading to degrees of Master of Forest Resources, Master of Science, and Doctor of Philosophy. In most cases graduate students center their graduate study in one of the specializations: management and social sciences; biological sciences; wood and paper. Notwithstanding, some students may prefer an interdisciplinary program of graduate study and are highly encouraged to devise such a program with the assistance of faculty in the appropriate specializations. Such programs are a long standing tradition in the College. The student will be assigned a Graduate Program Committee soon after he is enrolled, and this Committee is responsible for guiding the student in the early stages of his graduate program.

Graduate Programs

Graduate education in the Management and Social Sciences specialization includes programs in forest land

management, resource economics, economics of the forest products industry, forest biometry, forest fire protection, forest engineering, forest policy, mensuration, watershed management, forest photogrammetry, forest recreation, and conservation.

In the Biological Sciences specialization graduate study and research include study in wood anatomy and morphology, genetics of forest trees, forest tree physiology, tree nutrition, the ecology of forest tree species and communities, forest soils, forest meteorology, forest influences, forest entomology, forest pathology, forest hydrology, silviculture, and wildlife biology.

The Wood and Paper specialization offers graduate programs in the physics of wood and fiber composites, the technology of nonwoven systems, wood and extractives chemistry, wood technology, pulp and paper technology, and composition board technology.

Other special programs can be developed in any of the specializations in response to particular graduate needs.

In all areas of study the College maintains a close working relationship with faculties in associated colleges and departments throughout the University, including service on graduate committees.

Admission

Students who intend to work toward an advanced degree must apply for admission to the Graduate School and meet the requirements set forth by the Graduate School and the College of Forest Resources. Programs are offered leading to the Master of Forest Resources, Master of Science, and Doctor of Philosophy degrees.

Basic requirements for admission to the Graduate School are a bachelor's degree from an institution of recognized standing, a grade-point average of 3.00 in the junior and senior years of college work, approval of the Dean of the Graduate School, and approval of the college in which the work is to be taken. For complete information, see the *Graduate Study* section.

In addition to requesting admission forms from the Graduate Admissions Office, admission and reference forms also should be obtained from the Dean, College of Forest Resources. These afford supplementary information required by the College.

Graduate Degrees

Master of Forest Resources

The Master of Forest Resources is a professional degree designed for the student who desires to acquire a greater competence in a specific subject area of forest resources. Course work may be in forest resources and



in appropriate natural sciences and social sciences. There are both thesis and nonthesis options.

Master of Science

The Master of Science is a learned degree, often precursory to the Ph.D. Its requirements include a minor of at least 9 credits in a field outside the major. There are both thesis and nonthesis options. The nonthesis program requires at least 6 credits of research.

Doctor of Philosophy

The Doctor of Philosophy degree may be preceded by baccalaureate education in forest resources or in another discipline. The program of course work is designed around an appropriate selection of forest resources and related science or social science courses, with a view to successful preparation for the General Examination in forest resources, and the research and dissertation required for the degree. The time required, beyond minimum limits, for this preparation depends on the thoroughness and applicability of prior course work. Reading proficiency may be required in one foreign language, subject to Graduate Program Committee recommendation. If required, the language examination required should be passed within two years of the baccalaureate or one year of the master's degree, whichever has preceded the doctoral work, and must be passed before the General Examination. The General Examination, which may be oral, centers on the specific areas of forest resources and science or social science in the student's major field and covers most of the remaining subject matter of forest resources.

RESEARCH

Associate Dean for Research
Stanley P. Gessel
107B Anderson Hall

The College of Forest Resources has an extensive research program that is closely associated with the graduate program described above. The research is funded from state appropriations and from grant and contract funds from both public and private agencies. The College participates in a number of national and international programs related to research and graduate programs.

The University is a member of the Organization for Tropical Studies and the College currently has a major tropical ecology research program in O.T.S. centered in Costa Rica. Opportunities are available for graduate students to carry on research at field sites in Costa Rica and in other tropical countries.

The College is a member of the International Biological Program and serves as the directing institution for the Coniferous Forest Biome, covering a wide variety of research disciplines.

The College is represented on the University Council of Water Resources and also on the Washington State Water Research Center, with research programs related to the activities of both organizations. It also participates in the Quaternary Research Center at the University. All of these programs give the student opportunity to study in any of the forest science disciplines.

Other research programs include forest resource economics, forest production, quantitative ecology, soil and water, tropical forestry, wildlife, forest insects and diseases, chemical utilization of wood, and mechanical utilization.

Research Facilities

The laboratory facilities of the College, designed for both graduate and undergraduate use, include an extensive array of modern equipment for research. Optical equipment, electronic instrumentation for a wide variety of uses, gas chromatographs, spectrophotometers, physical test equipment, and an electron microscopy facility are but a few of the many research tools available. Specific laboratories are designed for soil chemistry and soil physics, polymer chemistry, meteorology, tree physiology, genetics, wood and extractives chemistry, physics of fibrous composites, applied mechanics, wood process technology, pulp and paper technology, pathology, entomology, and recreation studies.

The Charles Lathrop Pack Demonstration Forest, an enlargement and development of an original gift from the Charles Lathrop Pack Forestry Trust, is a tract of more than twenty-three hundred acres. It extends along both sides of the Mount Rainier National Park Highway at La Grande, Washington, 65 miles from the University. Pack Forest is an excellent terrestrial ecology area and a general natural science research laboratory. The Forest also serves as a demonstration area for advanced forest practices. An extensive arboretum area was established in the 1930's and has been constantly enlarged. Forest growth research plots have been maintained on the forest since 1928. Recent major research expansion has been made in forest ecology, forest soils, tree physiology, genetics, and pathology. Field laboratory facilities are available. In addition, complete facilities for classwork and living accommodations are available to students and faculty-in-residence working at the Pack Forest.

The *Lee Memorial Forest* is a young forest in Snohomish County, near Maltby, about twenty-two miles from the University. The 158-acre property was deeded to the College of Forest Resources in the early 1930's by Mr. and Mrs. George O. Lee in memory of Mr. Lee's parents, Mr. and Mrs. O. H. Lee, Snohomish County pioneers. An experimental and demonstration area, the Lee Memorial Forest is used for teaching and research in mensuration, silviculture, ecology, and forest soils. The accessibility, stocking, age, and site of the Lee Memorial Forest make it exceptionally valuable for studies and demonstrations of forestry practices applicable in western Washington.

The *Winnifred Denney Moore Memorial Forest* was a gift to the College of Forest Resources from Dr. Raymond C. Moore, professor of geology at the University of Kansas. The 450-acre tract is situated in the eastern Cascade Mountains, about twenty miles northwest of Cle Elum, in the Boulder Creek area of the Wenatchee National Forest. The tract is forested with ponderosa and lodge-pole pine, spruce, and fir. It is especially useful for ecological studies in eastern Cascade timber types and land management studies applicable to the high altitude sections of eastern Washington.

The *Gordon Marckworth Experimental Forest* is the newest educational and research facility of the College. The 6,900-acre forest was set aside from state-owned lands by the State Department of Natural Resources and is managed jointly by the State Department and the University. A close-in location (about twenty miles from campus) and the wide variety of forest and soil conditions make it an ideal site for teaching and research. In addition, its numerous ponds, beaver dams, streams, and swamps make excellent study areas for all types of recreation use. The area was logged about fifty years ago by the Cherry Valley Logging Company and is covered with typical second-growth stands of hemlock, fir, cedar, and alder. Records of the company increase its research value from the economic and management standpoint.

The College of Forest Resources, in cooperation with the Water Department of the city of Seattle, maintains the Allan H. Thompson research station in the Cedar River Watershed for studies in forest hydrology and mineral cycling in the forest ecosystem. This serves as a principal research site for the Coniferous Biome Program.

THE INSTITUTE OF FOREST PRODUCTS

Director

David P. Thomas

107A Anderson Hall

The *Institute of Forest Products* is the research, continuing education, and information branch of the College of Forest Resources. Grants, contracts, and fellowships awarded to the College are administered by the Institute. Technical supervision of research and continuing education programs is vested in the teaching and research faculties of the College and Institute (both serve as principal investigators or project directors). The employment of graduate and undergraduate students on grants and contracts is administered by the Institute. Many students earn research and thesis credit toward advanced degrees by working on major forest resources problems, supported by grants or contracts.

The Institute administers both the McIntire-Stennis Cooperative Forestry Research Program of the Cooperative State Research Service, U.S. Department of Agriculture, and cooperative work with the U.S. Forest Service authorized by the McSweeney-McNary Forest Research Act. Under the latter legislation, the Institute administers two federally funded cooperative programs directed toward research activities relating to forest-fire science and outdoor recreation.

Also, the Department of Interior has established the University Cooperative Park Studies at the College to investigate the broad range of fundamental natural and social sciences problems in the National Park System and to coordinate curricula and research of undergraduate and graduate students in these assigned areas of interests.

The Institute exercises supervision over all activities associated with the Peace Corps/Forestry Programs. Peace Corps volunteers who qualify for admission to the graduate school have the opportunity to work toward degree-oriented research projects that are mutually satisfactory to the cooperating international forestry agencies, the College of Forest Resources, and the individual student. Degree credit, commensurate with productivity and effort, may be granted.

The Institute coordinates a wide variety of Continuing Education programs directed to the introduction and more effective application of new technology in the forest industries, and the solution of contemporary problems related to the use of forest resources. Symposia, conferences, and short courses are designed to meet these objectives.

College Physical Plant and Services

The College occupies a complex of three buildings, Alfred H. Anderson Hall, the Hugo Winkenwerder Forest Sciences Laboratory, and Julius H. Bloedel Hall.



Alfred H. Anderson Hall, the gift of Mrs. Agnes H. Anderson in honor of her husband, a pioneer lumberman and civic leader in the state of Washington, has been the center of the College since 1925. The Hugo Winkenwerder Forest Sciences Laboratory, named after the distinguished Dean of the College from 1912 to 1945, was completed in 1964. The completion of Bloedel Hall, dedicated to Julius H. Bloedel who was a leading forest industrialist and long-time supporter of the College, provides a laboratory facility for physical sciences research. The three-building complex houses administrative offices, classrooms, seminar rooms, the Forest Club Room, laboratories, the library, herbarium, and the wood collection.

The library, a branch of the University's Henry Suzallo Library, consists of more than 26,000 bound volumes and 33,000 pamphlets, reports, and monographs. It also has an excellent collection of approximately 2,500 periodicals and many indexes to current literature in forestry and supporting sciences. Under the nationwide Farmington Plan sponsored by the Special Library Association, the forest library has assumed responsibility for collecting foreign material published in the fields of forestry and pulp and paper technology, providing unusual opportunity for academic research.

The herbarium supplements forestry student's field work in dendrology. The collection contains representative plant material from all parts of the United States and includes dried, mounted specimens of shrubs, hardwood trees, and conifers. Fruit specimens and a complete cone collection of American conifers are maintained apart from the mounted collection. Another herbarium complete in range plants is maintained by the Department of Botany and is available for use by forestry students.

The *University Arboretum* is a 200-acre park planted with trees and shrubs from all over the world. The diversified topography of the Arboretum together with the mild climate of the Puget Sound region permit the growth of a greater number of species and varieties than is possible in almost any other area of the Northern Temperate Zone. The Arboretum is easily accessible from the campus.

The *Forest Club* is a service and social organization for forestry students. Membership is open to everyone matriculated in the College. The Club holds a number of meetings and social events during the academic year, and members also participate in service programs.

Xi Sigma Pi, the national forest honorary fraternity, was founded at the University of Washington in 1908. Election to membership is recognition of outstanding academic achievement and professional promise.

The *Washington Foresters Alumni Association* is composed of graduates of the College. An annual meeting and seminar and a periodic newsletter keep alumni and College in close contact with mutual benefit.

The College of Forest Resources faculty helps forestry students to obtain summer employment while in the University and permanent employment upon graduation. Summer work is available through the several federal and state public agencies or the numerous private companies in the wood-using industry of the region. Many of these agencies and companies send representatives to the College to interview prospective employees. All students are encouraged to seek suitable summer employment because such work offers an excellent opportunity for practical experience as well as financial help.



HEALTH SCIENCES

The art of healing is as old as man. In today's world, the health sciences are, literally, a phenomenon. Research probes closer and closer to the heart of the life puzzle, and of disease; it enlarges the limits of life, gives insight to the disturbed. Aspects of the physical and mental and sociocultural well-being of man are the intimate concern of the healer and of the schools that teach him.

The Health Sciences Center was established in October 1970 to bring together all elements of the University of Washington that relate to health care teaching, research, and delivery. Its predecessor was the Health Sciences Division founded in 1945.

The Health Sciences Center is responsible for overall policy, curricula, budgetary matters, and other affairs of common interest to its components. In a complex on the southern edge of the campus are the Schools of

Dentistry, Medicine, Nursing, Public Health and Community Medicine, the Child Development and Mental Retardation Center, the Center for Research in Oral Biology, the Regional Primate Center, and the University Hospital. Within the Center as an administrative body but located in other parts of the campus are the College of Pharmacy, the School of Social Work, and Hall (Student) Health Center. Harborview Medical Center located in the central area of Seattle is also administratively part of the Center.

A major out-reach program is MEDEX, designed to train former armed services medics to work as assistants to civilian physicians. The School of Medicine, through the Department of Family Medicine, formed in 1971, and by following a regional approach to medical education that covers the states of Washington, Alaska, Montana, and Idaho, is developing ways to make its expertise available to areas not otherwise

served by a medical school. The School of Nursing curricula has been recently reorganized into departments in order to assure relevancy to out-reach programs.

Three affiliated off-campus hospitals afford clinical teaching facilities for students in dentistry, medicine, nursing, and pharmacy. The Veterans' Administration Hospital operates as a "Dean's Committee Hospital," with the cooperation of Seattle physicians and the Health Sciences faculty. The U.S. Public Health Service Hospital affords many clinical teaching opportunities and houses important University-related research. The Children's Orthopedic Hospital and Medical Center has excellent facilities in all branches of pediatrics. In addition, the Schools of Dentistry, Medicine, and Nursing, and the College of Pharmacy utilize the facilities of several other hospitals and public health agencies.

The Health Sciences Library (designated the Pacific Northwest Regional Health Sciences Library in 1968) serves the Center's students, faculty, and research personnel, and is available as well to personnel from other parts of the campus. The library is widely used by researchers, practitioners, and educators throughout Washington, Alaska, Montana, and Idaho. It offers glass-paneled, sound-proof rooms for reading, study, and conferences, as well as space for microfilm and microcard readers, and self-teaching carrels.

A major construction effort to be completed this year will add teaching space for the schools and greatly enlarge the library's physical plant in the Health Sciences Center. A 200-bed addition to University Hospital is in the planning stage, and planning for additions to Harborview Medical Center is well advanced. The latter plan includes a wing on the north side of Harborview Hospital and a Community Health Center nearby.



DENTISTRY

Dean

Maurice J. Hickey
C301 Health Sciences Building

Assistant Deans

Alton W. Moore
B320 Health Sciences Building

Saul Schluger
B327 Health Sciences Building

Associate Dean

Thompson M. Lewis
B322 Health Sciences Building

Professors

Oscar E. Beder, Charles L. Bolender, Jan Diepenheim, John D. Gehrig, Robert E. Guild, Walter B. Hall, A. Ian Hamilton, Maurice J. Hickey, Jean T. Hodson, Patricia Keller, David B. Law, Thompson M. Lewis, Benjamin C. Moffett, Alton W. Moore, Kenneth N. Morrison, Eugene Natkin, Alfred L. Ogilvie, Richard A. Riedel, Russell Ross, Saul Schluger, Leo M. Sreebny, Irving B. Stern, Gerald D. Stibbs, Arnold Tamarin, Ralph A. Yuodelis

Associate Professors

Gerald D. Allen, Robert C. Canfield, Martha H. Fales, Paul J. Heins, James R. Hooley, F. Lloyd Jacobson, Roy C. Page, Murray R. Robinovitch, Ivens A. Siegel,

Dale E. Smith, Charles C. Swoope, Jr., Myron E. Warnick, Walter A. Wykhuis

Assistant Professors

William F. Ammons, Walter F. Bolin, Neil W. Bryant, Merwyn C. Crump, Michael M. Cohen, John M. Davis, George A. Drennan, Cyril O. Enwonwu, Gaither Everett, Richard P. Frank, Richard A. Goldman, Herbert P. Gordon, Richard C. Gordon, James D. Haberman, Gerald W. Harrington, Roy C. Hill, Donald R. Joondeph, Jack Keller, Sheppard Levine, James L. Lord, Robert W. McNeill, Albert F. Morgan, John C. Peterson, W. Stephen Teel, Edmond L. Truelove, Henry J. VanHassel, Norma Wells

Instructors

Marc W. Anderson, Virginia Anderson, Rebecca Bennett, Mae Mar Chin, Gary G. Cooley, James A. D'Anna, Edward C. Halpin, Roger W. Hansen, Sheila F. Hoople, Darlene K. Howard, Jana Langslet, Betty A. Leetsch, Robert P. Lindeman, Richard C. Moller, Margaret Ann Pearson, Richard R. Rolla, Gregory E. Smith, Leigh B. Toolson, James D. Weaver, Thomas G. White

Research Associate Professor

Jay D. Decker

Research Assistant Professor

Kalliope S. Pataryas

**Lecturer**

Dan G. Middaugh

In the School of Dentistry the student learns fundamental principles significant to the entire body of dental knowledge, and is expected to acquire habits of reasoning and critical judgment enabling him to implement that knowledge. To the School of Dentistry, the future development of the student is as critical as his professional training, and the program of instruction is designed to equip him, as a practicing dentist, with the knowledge and qualities necessary for solving problems of dental health and disease.

The School of Dentistry expects its students to learn the fundamentals of the basic health sciences, to master certain clinical skills, and to acquire a thorough understanding of professional and ethical principles. The four-year program encompasses these objectives.

The School of Dentistry is approved by the Council on Dental Education of the American Dental Association and is a member of the American Association of Dental Schools. It is a participating member of the Western Interstate Commission for Higher Education.

The School of Dentistry offers a four-year program of courses leading to the degree of Doctor of Dental Surgery (D.D.S.) and programs leading to the Master of Science in Dentistry (M.S.D.) for students in the Graduate School. Faculty in Oral Biology offer a graduate program leading to the Master of Science degree.

The four-year curriculum for the D.D.S. degree includes study in two main areas: basic sciences and clinical dental sciences. Instruction in the basic sciences is provided by the Departments of Biological Structure, Biochemistry, Microbiology, Pathology, Pharmacology, and Physiology and Biophysics, and the School of Public Health and Community Medicine of the Health Sciences Division. In the clinical dental sciences the Departments of Community Dentistry, Oral Diagnosis and Treatment Planning, Oral Biology, Oral Surgery, Orthodontics, Periodontics, Endodontics, Pedodontics, Prosthodontics, and Restorative Dentistry provide instruction in the fields of general dental practice and dental specialization.

As an integral part of the School of Dentistry, the Department of Dental Hygiene has the same basic objectives and offers courses of instruction leading to a Bachelor of Science degree with a major in Dental Hygiene.

Admission

Students planning to enter the School of Dentistry

should be aware that effective Autumn Quarter 1973 the University's Committee on Admissions requires that predental students complete the following courses before being admitted to the School. Those students who plan to take their predental education at other institutions should consult their admissions office concerning courses that provide subject matter equivalent to that required by the University of Washington.

Subject

General Chemistry
Organic Chemistry
Introduction to Biochemistry
General Physics
Zoology—General Vertebrate Biology
General Microbiology

UW Equivalents

Chemistry 140, 150
Chemistry 231, 232
Biochemistry 405
Physics 114, 115, 116
Biology 212
Microbiology 301

In addition, students seeking admission to the School of Dentistry should take a minimum of 30 credits divided among three or more of the following study areas, including a minimum of 10 credits in one area: anthropology, economics, English, history, philosophy, political science, psychology, sociology.

The Committee on Dental Admissions highly recommends that predental students also choose electives with the purpose of further broadening their intellectual and social backgrounds. Electives in speech, fine arts, languages, literature, business administration, and the behavioral sciences are recommended.

Neither a prior degree nor a minimal number of predental credits are required for admission. Currently, however, students who are being accepted into the School of Dentistry have, on the average, completed more than 180 credits.

Application Procedure

Applications and all credentials should be sent to the Committee on Dental Admissions, University of Washington School of Dentistry. The final date on which applications for entrance in Autumn Quarter may be submitted is January 1. Prior to that date, each applicant must submit the following:

1. Formal application for admission on the form furnished by the School of Dentistry.
2. Two official transcripts from *each* college attended (one copy if attending the University of Washington) sent directly from the registrars of the institutions where preprofessional training was taken to the Committee on Dental Admissions. Transcripts should show (a) a complete college record, with grades and credits; (b) subjects the applicant is taking or will take to complete his preprofessional training before entering the School of Dentistry (if this information is not shown on the transcript the applicant must forward a separate schedule). It is the applicant's responsibility to see that

transcripts are forwarded to the Office of Dental Admissions at the end of each quarter or semester.

3. One official transcript from high school attended. (University of Washington students excepted.)

4. At least four letters of recommendation, two of which must contain personal evaluation by science instructors (one letter if forwarded by the preprofessional committee of the school), and two from business or professional persons. The School of Dentistry does not provide a form for recommendations.

5. Physician's statement of physical examination taken within the last twelve months.

6. A list by title and credit of those courses that are presently being taken and that are planned to be taken in the future.

Processing of Applications

The Committee on Dental Admissions examines the credentials and bases its decision on the objective evaluation of these factors: preprofessional training, evidences of scholarship, residence of the applicant, dental aptitude test rating, and personal evaluation of the student by predental instructors and members of the Committee on Dental Admissions.

Washington participates in the student exchange program of the Western Interstate Commission for Higher Education, under which legal residents of certain Western states that do not have dental schools may pay the tuition and fees charged to legal residents of Washington, rather than the higher nonresident rate. These states are Alaska, Arizona, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Utah, and Wyoming. To be eligible for this program, the student must be certified by his home state. State eligibility requirements vary, and the number of students who can be included in the program each year depends on appropriations by the legislature of each state. A student interested in this program must apply to the certifying officer in his home state, whose address may be obtained by writing to the Western Interstate Commission for Higher Education, P. O. Drawer P, Boulder, Colorado 80302.

Dental Aptitude Test

Each predental student who applies for admission to the School of Dentistry is required to take the dental aptitude test given under the auspices of the Council on Dental Education of the American Dental Association. This test is given in October, January, and April at the University of Washington and at other schools throughout the country. Full information about the test is sent to each applicant for admission. It is required

that the applicant participate no later than the January testing period preceding Autumn Quarter enrollment.

Personal Interview

After all material pertinent to the application has been received and reviewed, the candidate may be requested to appear for a personal interview.

Notification of Acceptance or Rejection

Each candidate is given written notice of the acceptance or rejection of his application as soon as possible after the Committee on Admissions has reached a decision. Each applicant generally is informed of the Committee's decision sometime prior to July 15.

Honor Code

Each student accepted by the School of Dentistry is expected to indicate his willingness to participate in the School's Honor Code.

Tuition Fee Deposit

When a candidate has been notified that he is accepted by the School of Dentistry, he must deposit \$50.00 with the Comptroller of the University. This deposit is applied to the first quarter's tuition. It is refundable only in cases of withdrawal for bona fide illness, failure to complete basic predental requirements, induction into military service, or failure to pass the physical examination required of all students at the time of registration.

Promotion

At the end of each academic year the Executive Committee of the School of Dentistry evaluates the accomplishments of each student during the year and determines his fitness for promotion. When promotion is not recommended, the student is subject to dismissal from the School. The School of Dentistry reserves the right to dismiss any student from the School for any reason it deems sufficient. Scholastic standing is not the only requirement for promotion. Students are advanced only when their general attitude, scholastic progress, and personal attributes are considered satisfactory.

Awards and Honors

Mosby Book Awards. These scholarship book awards are presented to five senior students who have made significant contribution to general research. These certificates of award will permit selection of any one Mosby book with a catalog list price not exceeding \$30.00.

The American Society of Dentistry for Children. This award is presented by the Department of Pedodontics to a senior dental student who has shown outstanding interest and achievement in clinical pedodontics. The award consists of a certificate of merit, a one-year mem-



bership in the American Society of Dentistry for Children, and a one-year subscription to the *Journal of Dentistry for Children*.

The American Academy of Periodontology Award. For exceptional interest and ability in the field of periodontics, the American Academy of Periodontology awards to a senior student a one-year subscription to the *Journal of the American Academy of Periodontology*.

The American Academy of Oral Medicine Award. A certificate of merit is presented to the senior student demonstrating unusual ability in this phase of dentistry.

Department of Prosthodontics Award. A one-year subscription to the *Journal of Prosthetic Dentistry* and a plaque are presented to a senior student for academic and clinical excellence in prosthodontics.

Washington State Dental Association Award. This certificate is presented to the senior student who has demonstrated character and leadership together with high scholastic achievement during the four-year dental course.

American Academy of Gold Foil Operators. A certificate is presented each year to the senior student demonstrating greatest skill in gold foil performance.

American Dental Society of Anesthesiology Award. A certificate of merit and a one-year subscription to *Anesthesia Progress* are given to the senior student who has shown outstanding ability and interest in the field of pain control.

American Association of Endodontists Award. A certificate of merit and a one-year subscription to *Oral Surgery, Oral Medicine, and Oral Pathology* are presented to the senior student showing the highest degree of proficiency and interest in the field of endodontics.

The Alpha Omega Fraternity Award. This plaque is presented to the senior student with the highest scholastic average for his four years of dental studies.

Washington State Dental Hygienists' Association Award. A plaque and a one-year complimentary membership to the Washington State Dental Hygienists' Association are presented to the senior dental hygiene student whose activities have been outstanding and who shows promise of those qualities of leadership necessary for the advancement of the profession.

Omicron Kappa Upsilon is the national dental honorary society, founded in 1914. *Sigma Sigma* Chapter at the University of Washington was chartered in the spring of 1950 when the first class in dentistry was graduated. Each year the Chapter elects to membership 12 per cent of the graduating class in dentistry. These students

have distinguished themselves in scholarship and character and possess potential qualities for future professional growth and attainments.

Sigma Phi Alpha is the national dental hygiene honor society, founded in 1958. *Sigma* Chapter at the University of Washington elects to membership each year 10 per cent of the graduating class in dental hygiene.

These students have distinguished themselves in scholarship and demonstrate potential outstanding qualities for future professional growth.

Dennis P. Duskin Inspirational Award. Winner is selected by a majority of the Senior Class. The award is given to a senior who has shown outstanding character, personality, and integrity throughout his dental education.

Fellowships

Student Part-Time Research Fellowships

Awards in the amount of \$900 are available to a limited number of undergraduate dental students who are interested in undertaking research. The research may be on a part-time basis during the academic year or full time during the Summer Quarter. The grants are made upon the recommendation of the department heads concerned and the Dean. Funds for this purpose are provided on an annual basis by the Division of Research Grants, National Institutes of Health, and the United States Department of Public Health.

Information concerning other scholarships and fellowships for University students may be obtained from the Office of Financial Aids.

Research Grants

Grants-in-aid for sponsored research and special projects in the School of Dentistry totaled approximately \$920,000 during the past year. Approximately \$375,000 was received from government agencies and private sources, and \$12,000 from the state of Washington under Initiative 171. In addition, \$525,000 was received for Training Grants and Contracts.

Financial Aid to Students

Loan-fund information may be obtained through the Office of Financial Aids, 170 Schmitz Hall, Seattle, Washington 98195.

Fees

<i>Undergraduate Dental Students</i>	1971-72	1972-73
Residents	\$257	\$280
Nonresidents if enrolled 1970-71	\$539	\$613
Nonresidents newly enrolled 1971-72	\$613	\$613
Summer Quarter Part-time Dental Students	\$144	\$144
<i>Graduate Dental Students (according to number of credits)</i>		
Residents	\$217-\$257	
Nonresidents	\$471-\$613	
Summer Quarter Graduate Dental Students	\$217-\$257	

DEPARTMENTAL PROGRAMS

The School of Dentistry offers courses leading to the degrees of Doctor of Dental Surgery (D.D.S.), Bachelor of Science (B.S.), Master of Science (M.S.), Master of Science in Dentistry (M.S.D.), as well as Certificates in Orthodontics, Pedodontics, Periodontics, Endodontics, and Restorative Dentistry.

Degrees

Doctor of Dental Surgery

Upon completion of the four-year curriculum of the School of Dentistry, the D.D.S. degree is awarded to candidates who have (1) given evidence of good moral character; (2) completed the last two years of dental training as regularly matriculated students in the School of Dentistry; (3) satisfactorily completed all the required work with a grade-point average of at least 2.00; (4) fulfilled all special requirements; and (5) discharged all indebtedness to the University.

Work leading to the degrees listed below is also offered in the School of Dentistry.

Bachelor of Science

The curriculum leading to this degree is given by the Department of Dental Hygiene.

Master of Science

A program leading to the Master of Science degree is offered by the faculty in oral biology.

Master of Science in Dentistry

Work leading to this degree is available in the Graduate School.

Certificates in Clinical Divisions of Dentistry

Programs are not administered by the Graduate School; no thesis is required.

The School also provides professional training in the areas of basic science, for which the Bachelor of Science degree may be awarded by the College of Arts and Sciences, upon completion of the requirements for a major and approval of the department concerned.

Licensure

Admission to the practice of dentistry in any state is conditional upon the candidate's meeting the requirements of the State Board of Dental Examiners. In the state of Washington, admission to practice is dependent upon the candidate's having a D.D.S. or a D.M.D. degree and passing the examination conducted semi-annually by the State Board of Dental Examiners. The basic science examination may be waived if the candi-

date presents credentials showing he successfully passed Part I of the National Board Dental Examination.

Further information about licensure requirements and time of examinations may be obtained from the Division of Professional Licensing, Olympia, Washington 98501.

PROGRAMS IN CLINICAL DENTAL SCIENCES

Please find Basic Sciences in Dentistry listed in the *School of Medicine* section of this Catalog under Departments of Biochemistry, Biological Structure, Microbiology, Pathology, Pharmacology, Physiology and Biophysics.

Community Dentistry

Chairman

Robert E. Guild

112 Health Sciences Annex 2

The Department of Community Dentistry is concerned with the social, legal, political, economic, and psychological aspects of dental health care delivery.

Endodontics

Chairman

Eugene Natkin

B522 Health Sciences Building

Students in this Department are taught the basic knowledge and technics necessary for diagnosis and treatment of disease of the pulps of teeth.

In addition to the courses for undergraduate dental students the Department of Endodontics offers a graduate program for students working toward the degree of Master of Science in Dentistry with a specialization in endodontics.

Restorative Dentistry

Chairman

K. N. Morrison

B528 Health Sciences Building

The Department of Restorative Dentistry is concerned with the restoration or replacement of tooth structure lost through disease or trauma and consequently it is involved in the study of the form and function of the masticatory structures.

Oral Diagnosis and Treatment Planning

Acting Chairman

Alton W. Moore

B309 Health Sciences Building

The Department of Oral Diagnosis and Treatment



Planning provides training in diagnostic techniques, such as interrogation, examination, and X ray. The student learns to correlate information gained in the various departments and to plan both ideal and practical treatment for the patient.

Oral Biology

Chairman

Leo M. Sreebny

B122 Health Sciences Building

Oral Biology is concerned with basic biological mechanisms in normal and diseased oral tissues and structures. The Department offers courses for undergraduates, professional students in the health sciences, and graduate students. The Department offers programs for graduate students working toward the degrees of Master of Science in Dentistry and Master of Science.

Oral Surgery

Chairman

James R. Hooley

B348 Health Sciences Building

The Department of Oral Surgery provides training and clinical experience in the procedures used for all types of operations in the oral cavity. In addition to the courses for undergraduate dental students, the Department of Oral Surgery offers graduate study for students in the Graduate School working toward the degree of Master of Science in Dentistry with a specialization in oral surgery.

Orthodontics

Chairman

Richard A. Riedel

B374 Health Sciences Building

The objective of orthodontics is the prevention and correction of malocclusion of the teeth. In addition to the courses for undergraduate dental students, the Department of Orthodontics offers graduate study for students in the Graduate School working toward the degree of Master of Science in Dentistry with a specialization in orthodontics.

Pedodontics

Chairman

David B. Law

B343 Health Sciences Building

The objective of the Department of Pedodontics is to provide the student with a broad understanding of the growth and development of the child and the principles of preventive dentistry plus a working knowledge of the skills necessary for the maintenance of optimal dental

health. In addition to the courses for undergraduate dental students, the Department of Pedodontics offers graduate study for students in the Graduate School interested in working toward the degree of Master of Science in Dentistry with a specialization in pedodontics.

Periodontics

Chairman

Walter B. Hall

B412 Health Sciences Building

In the Department of Periodontics, students learn about the periodontium in health and disease, how to diagnose periodontal diseases, and how to treat diseases that affect the periodontal tissues. The Department also offers graduate study and training in Periodontics at the certificate and advanced-degree levels.

Prosthodontics

Chairman

Charles L. Bolender

C402 Health Sciences Building

The Department of Prosthodontics provides instruction in the fabrication and maintenance of removable complete and partial dentures. In addition to the courses for undergraduate dental students, the Department of Prosthodontics offers, through the restorative dentistry graduate program, a 21-month specialization program for students in the Graduate School working toward the degree of Master of Science in Dentistry or a Certificate of Achievement.

Maxillofacial Prosthesis Clinic

Director

Oscar E. Beder

A407 Health Sciences Building

This clinic is a service clinic available to the public and all departments of the University for treatment falling in the maxillofacial field of prosthodontics. Treatment usually consists of constructing and fitting planned remedial and restorative appliances for losses or defects in the oral or facial regions. Expedient prosthodontic appliances are fabricated for losses and defects of other body areas and for adjunctive therapy of patients. Assistance is also rendered in developing special devices used for research and teaching by various departments.

Prosthodontic Laboratory

Technicians

Jiro Todo, Joe Woo

This laboratory furnishes prosthodontic technician services to undergraduate students of the Department of

Prosthodontics and for the Department's maxillofacial section.

Conjoint Courses

Conjoint courses are offered cooperatively by departments in the School of Dentistry. They are designed to integrate clinical training in two or more fields.

Dental Hygiene

Director

Martha H. Fales

B214B Health Sciences Building

This curriculum offers a professional program leading to a baccalaureate degree that emphasizes the liberal arts and the sciences and prepares the student for a career in Dental Hygiene. Provision has been made for courses to provide a minor in dental hygiene as part of the College of Education master's degree program for Community College teachers of technology. Further information about this program is available from the College of Education.

The Bachelor of Science degree with a major in dental hygiene requires two academic years of predental hygiene courses followed by two additional years of enrollment in the dental hygiene program. This basic curriculum provides a background in the educational, communicative, and clinical skills necessary for professional practice. The program is approved by the Council on Dental Education of the American Dental Association.

The student in dental hygiene learns and practices a future role as a member of the dental health team. The student learns preventive, educational, and clinical services that include plaque control and patient education, application and uses of materials for the prevention of dental caries, removal of soft and hard deposits from tooth surfaces, polishing the teeth, taking and processing of dental radiographic surveys, the administering of anesthetics, placing of restorations in the teeth after the dentist has cut the preparation, and provision of other services as directed by the dentist. The program is planned to give the student a wide range of professional experience available in a health sciences center.

The dental hygiene student is encouraged to develop habits, interests, and attitudes favorable to continued professional growth.

Dental hygiene students are eligible to apply for scholarships offered through the Office of Financial Aids. In addition, the American Dental Hygienists' Association administers national scholarships for advanced

students enrolled in dental hygiene programs. Current scholarship information is available from the Department of Dental Hygiene.

BASIC CURRICULUM IN PREDENTAL HYGIENE

The basic curriculum is open to applicants who meet the requirements of this Catalog as outlined in the *College of Arts and Sciences* section and who complete 90 credits scheduled to include courses listed below.

COURSES	CREDITS
BIOL 101-102 General Biology	10
ZOOL 118 Survey of Physiology or 208 Human Physiology . .	5
CHEM 101 General Chemistry	5
CHEM 102 General and Organic Chemistry	5
PSYCH 100 General Psychology	5
SOC 110 Survey of Sociology	5
SPCH 103 Basic Principles of Oral Communication	5
Plus elective subjects chosen to meet distribution requirements of the College of Arts and Sciences	50

Students taking their preprofessional training at the University of Washington follow the two-year predental hygiene program offered in the College of Arts and Sciences (see the *College of Arts and Sciences* section). Students in other institutions should consult Volume II of this catalog, *Description of Courses*, compare the above listed courses with those given in their schools, and seek the advice of the Director of Admissions for course equivalents. It is recommended that students who anticipate transferring to the University of Washington request an evaluation of their credits earned during their first year of study. This may be accomplished by writing directly to the Department of Dental Hygiene.

APPLICATION PROCEDURE

One class of dental hygiene students is accepted each spring. On or before March 1 each applicant must submit the following:

1. Formal application on the form provided by the Department of Dental Hygiene, School of Dentistry.
2. Official transcripts of high school and college records. Transcripts must be sent directly to the Department of Dental Hygiene, School of Dentistry, from the registrar's office of each institution in which predental hygiene education was obtained.
3. A written list of subjects that the applicant is taking or will take to complete the requirements.
4. At least two letters of recommendation.

Additional transcripts must be provided by the applicant to show courses completed during each subsequent quarter following application.

PROCESSING OF APPLICATIONS

Evaluation of Credentials

The Committee on Dental Hygiene Admissions reviews



the credentials and bases its decision on the objective evaluation of preprofessional education, scholastic records, residence of the applicant, and personal characteristics of the applicant.

Personal Interview

Eligible applicants are interviewed by the Committee on Dental Hygiene Admissions. The interview is held at the School of Dentistry, and the applicant is notified of the date and time.

Notification of Acceptance or Rejection

Candidates are given written notice of acceptance or rejection of their application as soon as possible after the Committee on Admissions has completed the necessary interviews.

TUITION AND CHARGES

Students in the dental hygiene curriculum pay the regular tuition of the College of Arts and Sciences. Expenses for uniforms, instruments, and other equipment are additional to the tuition fee.

BASIC CURRICULUM FOR MAJOR IN DENTAL HYGIENE

This program includes specific courses in the Schools of Dentistry and Medicine, and in the College of Arts and Sciences. Dental hygiene students take initial courses with dental students; the core curriculum in dental hygiene techniques; and electives in areas of teaching, community service, and/or research.

Graduation Requirements

To qualify for the Bachelor of Science degree with a major in dental hygiene, a student must meet both the basic proficiency and distribution requirements of the College of Arts and Sciences and of the curriculum in dental hygiene. A total of 180 academic credits is required for graduation.

Baccalaureate Curriculum for Certificate Dental Hygienists

This program provides dental hygienists with the opportunity to broaden their previous education with courses in liberal arts, humanities, and basic sciences so that they may go on to graduate study or to positions in administration, teaching, or community health. The requirement for graduation in this curriculum is also a total of 180 academic credits. The degree is also a Bachelor of Science with a major in dental hygiene.

Students entering this curriculum must have successfully passed National Board Examinations for Dental Hygiene and present, at the time of application, a valid license to practice dental hygiene. These students must complete a minimum of 10 credits in the Department of Dental Hygiene, including the successful completion

of one advanced course in clinical dental hygiene techniques.

CONTINUING DENTAL EDUCATION

Director

Thompson M. Lewis

B322 Health Sciences Building

To provide for the ever-expanding developments in method and related subject matter in dentistry, a number of short, intensive courses ranging from one day to two weeks or longer are offered at various times in each special area of dentistry. Instructors are chosen from local, national, and international sources to provide this service. Since these courses are highly specialized, no specific course content can be conveniently listed. A list of forthcoming courses may be obtained from the Office of the Director.

GRADUATE PROGRAMS

Associate Dean and Graduate Program Adviser

Saul Schluger

B327 Health Science Building

MASTER OF SCIENCE IN DENTISTRY

The School of Dentistry offers course work leading to a Master of Science in Dentistry degree in the Graduate School, with specializations in endodontics, oral biology, oral surgery, orthodontics, pedodontics, periodontics, or restorative dentistry (fixed partial dentures, operative dentistry, prosthodontics).

Master of Science

A program leading to the Master of Science degree is offered by the faculty in Oral Biology. The requirements for this degree are a Bachelor of Science or higher academic degree and a minimum of seven quarters in residence. The purpose of this graduate program is to train qualified teachers and investigators in the clinical and basic science disciplines. The program is designed to accommodate the interests and abilities of individual students.

Application Procedure

Applications are received and processed throughout the school year from applicants desiring to work for a Master of Science in Dentistry degree with a specialization in any one of the fields previously listed. Applications for admission to the graduate dental curriculum,

with all necessary credentials, must be submitted to Graduate Dental Education on or before December 1 for consideration for entrance in the following Autumn Quarter. This applies to all new students seeking admission to graduate study in dentistry. It is imperative that applicants observe this deadline in order to ensure prompt attention to credentials and replies to correspondence.

Admission

An applicant may be admitted to the Graduate School for work leading to a Master of Science in Dentistry degree provided he meets the admission requirements of the University of Washington Graduate School, and provided he is a graduate of a school of dentistry approved by the Council on Dental Education of the American Dental Association, or of a university dental school located outside of the North American continent whose curriculum and admission requirements are similar to those of the University of Washington School of Dentistry.

An applicant's acceptance as a student must be approved by the Graduate Admissions Committee of the School of Dentistry. Such approval will be based upon the availability of places in the various classes. The capacity number of students for each specialization commencing Autumn Quarter is as follows: eleven in orthodontics, three in pedodontics, eight in periodontics, three in endodontics, two in oral biology, two in oral surgery, two in prosthodontics, and two in restorative dentistry. Applicants selected by the Graduate Admissions Committee in Dentistry will be recommended to the Dean of the Graduate School for admission to the Graduate School.

Residence

A minimum of seven consecutive quarters (21 months) of residence is required for the Master of Science in Dentistry degree in the fields of oral biology, orthodontics, pedodontics, prosthodontics; eight quarters (24 months) in endodontics, periodontics and restorative dentistry; four quarters (12 months) of residence for oral surgery, plus a two-year hospital residency. No foreign language is required. New students for graduate training in periodontics will be accepted on the basis of a dual program consisting of certificate (residency) training in the clinical disciplines, progressing parallel to the standard master's or doctor's program in the basic science choice of the student. Such students must be admitted to the Graduate School and must meet the requirements for the master's or doctor's degree in the basic science field.

Programs of Study

The programs are planned to prepare students to think independently, to evaluate their own services and the literature of the programs, and to develop their clinical operative skills to a level to permit the successful practice of their chosen specialty. Emphasis is placed on the basic principles of diagnosis and treatment, which comprise one of the clinician's most valuable assets. The seminar method of teaching is generally used. The purpose of the programs is not only to train students in the art of their respective specialties, but also to encourage basic science research in the specialties on a graduate level in possible preparation for academic careers or for research. The research may be undertaken in the field of specialization or in cooperation with other departments. The opportunity for collaborative research is excellent because of the proximity of the other colleges and departments in the University.

Class Schedules

The graduate programs of the School of Dentistry operate on the quarter system of the University. There are three 11-week quarters in the academic school year.

In order for the graduate dental programs to be continuous, the Summer Quarter has also been made an 11-week quarter, or equivalent in length to the other quarters in the school year.

POSTDOCTORAL TRAINING

Requirements for admission to the postdoctoral training programs of study for certificates in the various major clinical fields are similar to those for admission to graduate study for the master's degree. The postdoctoral student is required, during six consecutive quarters of residence, to maintain the same academic standards as the graduate student. These programs are not administered by the Graduate School, and a thesis is not required. The course content may vary somewhat from the graduate program, depending upon the department in which the program is taken.

Following the successful completion of the prescribed courses by the postdoctoral student during the required residency, a Certificate in Orthodontics, Pedodontics, Periodontics, Endodontics, Oral Surgery, or Restorative Dentistry will be granted him by the School of Dentistry. The fees each quarter are the same as for graduate training, and the residency requirements remain the same. For further information, address: University of Washington School of Dentistry, Associate Dean, Graduate Dental Education, Seattle, Washington 98195.



MEDICINE

Dean

Robert L. Van Citters
C304 Health Sciences Building

Associate Deans

E. Harold Laws, John N. Lein, James H. Haviland,
Thomas E. Morgan, M. Roy Schwarz, Francis C.
Wood

Assistant Deans

Benjamin T. Belknap, Gary E. Striker

Rapid advances in basic knowledge and in the technology relating to medicine during this century have rendered the traditional medical curriculum obsolete. It is no longer possible to train all physicians in an identical fashion. Fundamental knowledge and concepts common to the needs of all who are physicians must be identified and taught in a relevant and coherent fashion. Beyond this minimum requirement, opportunities must be provided to allow students from a variety of backgrounds and with a variety of talents to pursue their educations along different pathways. Those who are motivated toward service must be allowed to prepare themselves for the great variety of opportunities developing in our modern health care system. Those motivated toward investigation must be provided opportunities for testing their talents at an early stage in their careers and be provided with educations that

prepare them to be competent investigators. All must be stimulated to take responsibility for their educations throughout their lives, for the rapid changes of the past are a prediction of still more rapid changes in the future. Education only begins in the School of Medicine. It extends throughout life.

THE CURRICULUM

The curriculum is divided into two major divisions, the basic curriculum, which must be completed by all students who are candidates for the M.D. degree, and the pathway curriculum, which provides an opportunity for students to complete their degree requirements by taking courses in one of four pathways—family practice, clinical specialist, behavioral specialist, and medical scientist. Attainment of the M.D. degree is based upon credits earned and is not dependent upon a specific time requirement. Capable students who take a maximum load per quarter may complete their degree requirements in ten to eleven academic quarters. Such students, by utilizing summer quarters, may finish their requirements in three years. Other students may proceed at a slower pace and take four to five years to complete their requirements. The curriculum thus offers flexibility in educational experience and flexibility in individual programming.

Admission to the University and to the School

The faculty of the School of Medicine believes that the appropriate level of scholarly achievement and preparation for medicine can best be developed in a liberal arts program with the emphasis on a major area of interest selected by the student in any field sufficiently demanding in scholastic discipline. No particular major is given preferential attention in selection.

Before admission each applicant must have completed the minimum requirements listed below and must have demonstrated his academic proficiency in these subjects by obtaining an acceptable grade-point average. In addition to the following credits, proficiency in English and basic mathematics is expected of every applicant. A bachelor's degree is encouraged, but it is not required for admission.

	Quarter Credits	Semester Credits
BIOLOGY	12	8
CHEMISTRY	18	12
PHYSICS	12	8

In recognition of the diverse opportunities afforded the graduate in medicine, the specified requirements are purposely kept to a minimum. In this manner each student has the opportunity to pursue, as his major field of study, any area of special interest to him—the physical sciences, biological sciences, or humanities—and still acquire the intellectual skills necessary to the regular medical curriculum. Throughout the medical program, elective time as well as time for research and thesis affords the student an opportunity to apply the knowledge and concepts acquired in his major field to the appropriate areas of medicine.

Application Procedure

The University of Washington is a participant in the American Medical College Application Service (AMCAS) Program. Applications may be obtained from AMCAS Offices, 1776 Massachusetts Avenue NW, Suite 301, Washington, D.C. 20036. Because the Admissions Committee begins examining applications a year ahead of the time of entrance, *early application is advisable*.

Applications will be accepted beginning April 15 and should be returned before October 1. Applications received after November 15 will not be given consideration for the following academic year. An application fee of \$10.00 is required of all applicants who are not residents of the state of Washington. On or before December 15 each applicant must submit a formal application for admission on the form furnished by AMCAS, and the score received in the Medical College Admission Test. Arrangements for this test may be

made with the premedical adviser at the institution where premedical training is being taken. Medical aptitude tests are customarily given in May and October of each year. The student is advised to take the test in May if at all possible. When the student takes the test, he should request that his score be sent directly to the Admissions Committee. Further information on this test may be obtained by writing to the Psychological Corporation, 304 East 45th Street, New York, New York 10017.

In addition the Admissions Committee may require the following:

1. Official transcripts (two copies) of previous college record (sent directly from the registrars of the institutions where preprofessional training was taken) showing the complete college record, with grades and credits.
2. A list of the courses the student is taking and plans to take to complete his preprofessional study before entering the School of Medicine.
3. Names, addresses, and departments of two science and two nonscience instructors to whom recommendation forms may be sent. (University of Washington premedical students should consult the premedical adviser about recommendations.)
4. A short autobiography.
5. A 500-word essay.

Primary consideration is given to applications from residents of Washington and from students certified by the Western Interstate Commission for Higher Education. A certain number of out-of-state applicants are accepted each year, with preference given to qualified applicants from neighboring states and territories where no medical school exists. Applicants from states outside the Pacific Northwest are accepted only when they present exceptional academic records.

It is the policy of this school not to accept for admission students who have failed in other medical schools or who have been dismissed from them.

All applicants are given consideration on the same basis regardless of race, color, sex, religion, or parental occupation.

Students taking their premedical undergraduate work at the University of Washington customarily enroll in the College of Arts and Sciences.

Information concerning admission to the curriculum in Physical Therapy and in Occupational Therapy is included under the Department of Rehabilitation Medicine, and in Medical Technology under the Department of Laboratory Medicine.



Transfer Students

Transfer students are accepted for clinical training. Ninety credits are required for completion of the clinical training phase, but flexibility in programs is possible. Students should contact the Admissions Committee for the latest information.

Processing of Applications

Evaluation of Credentials. The Admissions Committee examines each applicant's credentials and bases its decisions on the objective evaluation of these factors: preprofessional training, evidences of scholarship, place of residence, Medical College Admission Test rating, and personal evaluation of the student by premedical instructors in their letters of recommendation.

Personal Interview. If an examination of the credentials shows them to be satisfactory and within the competitive group, the applicant may be requested to appear for a personal interview by the Admissions Committee. At the time of interview, the applicant is requested to submit two unmounted passport-quality photographs (2 by 3 inches). A personal interview will not be requested if the credentials are not satisfactory. Applicants who are in school a considerable distance from Seattle may request that their interview be held at some more convenient location; out-of-state interviews are arranged by the Committee.

Notification of Acceptance or Rejection. All candidates are given written notification of the acceptance or rejection of their applications as soon as possible after the Admissions Committee has reached a decision. Acknowledgment of notification of acceptance should be made in writing by the successful applicant within a reasonable length of time.

Acceptance of Appointment. Within several weeks after a candidate has accepted the position offered to him in the School of Medicine, the Comptroller of the University will request a deposit of \$50.00. This deposit is applied to the first quarter's tuition. If the student wishes to withdraw, the deposit is refundable for any reason before the deadline set by the Association of American Medical Colleges. After this date, it is refundable only in case of withdrawal for bona fide illness, failure to complete basic premedical requirements, induction into military service, or failure to pass the physical examination required of all students at the time of the first registration.

Student Evaluation and Promotion

Student evaluation is based upon the faculty's observations of the student's work, and upon written papers and examinations. Periodic review of student progress is made and students are informed of their deficiencies

and of their strong qualities. Dismissal from the school may occur if a student fails to maintain an acceptable academic record. Opportunities to make up unsatisfactory work are allowed at the discretion of the Dean and the Executive Committee of the School of Medicine. Dismissal may also occur if qualities of character and personality not deemed commensurate with a career as a physician come to light at any point. Once dismissal has occurred, readmission requires the approval of the Executive Committee of the School of Medicine. Readmission after dismissal will not be considered unless there is substantial evidence that the problems causing dismissal have been resolved.

All students are required to pass Parts I and II of the National Board of Examinations. They are also required to participate in special surveys and examinations directed toward the evaluation of student performance and of the educational objectives of the School of Medicine.

Fees, Extra Service Charges, and Rentals

All fees, extra service charges, and rentals are payable in United States dollars at the time of registration. The University reserves the right to change any of its fees and charges without notice.

MEDICINE	PER QUARTER
FULL TIME (More than 12 credits)	
RESIDENT	\$257
NONRESIDENT	\$613
PART TIME (2-12 Credits)	
RESIDENT	\$147-\$247
NONRESIDENT	\$250-\$580

Medical Technology, Physical Therapy, Prosthetics and Orthotics, and Occupational Therapy fees are the same as General Student Fees. See *General Information* section of this Catalog.

Information concerning resident, nonresident, and veteran status can be found in the *Rules and Regulations* section in this Catalog.

Western Interstate Commission for Higher Education: The School of Medicine participates in the student exchange program of the Western Interstate Commission for Higher Education, under which legal residents of certain Western states that do not have medical schools may pay the tuition and fees charged to legal residents of Washington State rather than the higher nonresident rate. These states are Alaska, Arizona, Idaho, Montana, Nevada, and Wyoming. To be eligible for this program, the student must be certified by his home state. State eligibility requirements vary, and the number of students who can be included in the program each year depends on appropriations by the legislatures. A student interested in this program must apply to the certifying officer in his home state, whose address may be

obtained by writing to the Western Interstate Commission for Higher Education, University East Campus, Boulder, Colorado.

Books and Supplies. The average annual cost for medical students is \$250. This includes books, equipment, microscope rental, and examination fees.

Transportation. Students are responsible for providing their own transportation and paying the parking fees required at the University and the several affiliated hospitals. Budgets should be planned accordingly.

Financial Aid

The lengthy training required to master the accumulated knowledge necessary to the practice of medicine has resulted in costs which seem prohibitive to many prospective students. No student interested in becoming a physician should be deterred from applying to the University of Washington School of Medicine for financial reasons. Both public and private endowments have been given to the School to provide financial aid to deserving medical students. During the academic year, scholarships, grants-in-aid, loans, and traineeships are available.

Application for Aid Procedures

Unless otherwise specified, application for fellowships, scholarships, and grants-in-aid should be directed to the Office of the Dean of Medicine before June 1 of each year. Application forms and related information may be obtained from the Office of the Dean of Medicine upon request. The student must be willing to submit a detailed and realistic analysis of his complete financial situation. In case of emergency or special need, an application for grant-in-aid may be made at any time. Application for a loan may also be made at any time to the Office of the Dean. Application for assistantships should be made to faculty members. All payment of monies concerned with endowment awards, prizes, stipends, grants-in-aid, and loans are made by the University comptroller.

Financial Aid

Scholarships have been established for entering students who are particularly gifted and unable to finance their medical educations. Substantial loans are available to worthy students in need of financial aid to help cover the cost of their medical education. No interest is charged during the time the student is in school and from one to three years after graduation.

There is no rule prohibiting students from outside employment. However, employment is discouraged and a number of scholarships and grants-in-aid are given with the stipulation that the student will not engage in

remunerative employment without consent of the Scholarship Committee. There are a few opportunities in Seattle hospitals for part-time work for third- and fourth-year students. A limited number of research assistantships and fellowships are available in the summer months.

Stipends of the various scholarships, loans, and grants range from full tuition and fees to larger amounts sufficient to cover the entire financial needs of the student through four years of medical school.

Research and Training Grants

Each year grants from various public and private sources are received by individual faculty members and by the School of Medicine to support medical research and training in teaching and research. Extensive training programs, supported largely by the National Institutes of Health, provide training in teaching and research to individuals at the undergraduate, graduate, and post-doctoral levels.

Traineeships

A traineeship is an academic award of honor, based upon scholastic achievement, designed to aid and encourage the student in his studies or research. In cases in which the trainee collaborates with a faculty member, the trainee is expected to take the lead as principal investigator. The trainee is allowed freedom of publication of his results as a condition of the grant. He is expected to devote his full time and energy to his project and may not be otherwise gainfully employed during the period of his traineeship. Ordinarily, the traineeships cover the three months of a free quarter, often the summer.

Assistantships

A number of positions with individual faculty members are usually available to medical students during the summer months. Most of these positions involve laboratory work on research projects.

Honors

A charter as Alpha of Washington was granted to the School of Medicine in 1950 by *Alpha Omega Alpha*, the honorary medical fraternity. Members are elected by the membership of Alpha Omega Alpha on the basis of high scholarship and good moral character.

Medical Thesis Program

The medical thesis program of the School of Medicine is voluntary, and participation in it is initiated by the student. Often a student will become especially interested in some particular field in medicine. This interest will lead him to a desire to learn more about the field



or to do special work in it. The thesis program is a means of fulfilling his desire. A prize may be awarded for the best thesis submitted each year, and certain departments have available prizes for the best thesis written under that department's supervision. The preparation of a satisfactory thesis may carry with it honors in the department. Further information concerning the thesis program may be obtained from the chairman of the Medical Thesis Committee or from the Dean's Office.

Graduation With Honor

A degree of Doctor of Medicine with honor may be awarded to students with high achievement who, in addition, have demonstrated initiative and success in scholarly pursuits related to medicine outside of the organized curriculum. Evidence of such scholarly achievement may be represented by a thesis of acceptable quality or a paper accepted for publication in a recognized scientific journal. Alternatively, a scholarly analysis of a clinical subject comparable to review papers and case reports, acceptable for publication in better journals, may be submitted.

Departmental Programs

Doctor of Medicine

Upon completion of the curriculum of the School of Medicine, the M.D. degree is awarded to candidates who have (1) given evidence of good moral character; (2) completed the last two years of medical training as regularly matriculated students in the School of Medicine; (3) satisfactorily completed the required work and examinations throughout the course; (4) fulfilled all special requirements; and (5) discharged all indebtedness to the University.

Bachelor of Science

Curricula leading to a bachelor's degree with a major in microbiology are offered through the College of Arts and Sciences. These courses may be found in the *General Catalog, Volume II*, and the curricula are described in the *College of Arts and Sciences* section of this volume.

Bachelor of Science in Medical Technology

A curriculum in medical technology is offered by the Department of Laboratory Medicine in the School of Medicine. It provides professional study in the biological sciences and clinical techniques in medical technology. Information concerning admission to the medical technology curriculum may be found under the *Department of Laboratory Medicine* section.

Bachelor of Science in Physical Therapy

A curriculum in physical therapy is offered by the Department of Rehabilitation Medicine in the School

of Medicine. It provides professional training in the basic sciences and the clinical use of accepted physical therapy modalities and procedures. Information concerning admission to Physical Therapy may be found under the Department of Rehabilitation Medicine.

Bachelor of Science in Occupational Therapy

A curriculum in occupational therapy technology is offered by the Department of Rehabilitation Medicine in the School of Medicine. It provides professional training in the basic sciences and the clinical use of occupational therapy. Information concerning admission to Occupational Therapy may be found under the Department of Rehabilitation Medicine.

Bachelor of Science in Prosthetics and Orthotics

A curriculum in prosthetics and orthotics is offered by the Department of Rehabilitation Medicine in the School of Medicine. It provides professional training in the basic sciences and the clinical application, design, and fabrication of prostheses and orthoses. Information concerning admission to the curriculum in prosthetics and orthotics may be found under the Department of Rehabilitation Medicine.

Master of Science and Doctor of Philosophy

Work leading to master's degrees and doctoral degrees is offered, in accordance with the requirements of the Graduate School, in the Departments of Biochemistry, Biological Structure, Microbiology, Pathology, Pharmacology, and Physiology and Biophysics. A master's degree program is offered by the Departments of Biomedical History, Rehabilitation Medicine, and Surgery.

In order to expedite the training of physicians who wish to specialize in public health or community medicine, a program is available that leads simultaneously to the degree of Doctor of Medicine and Master of Public Health (M.P.H.). In most cases the program can be completed in four years, provided that at least two summers are spent in course and/or research work. In general, the joint degree program students will pursue either the Clinical Specialist Pathway or the Family Physician Pathway. Students can elect concentration in any of four departments of the School of Public Health and Community Medicine: (1) Biostatistics, (2) Environmental Health, (3) Epidemiology and International Health, or (4) Health Services.

Students who intend to work toward one of these degrees should confer with the chairman of the department in which they intend to pursue their graduate study. Specific requirements for admission to work for advanced degrees are given in the *Graduate Study* section.

Medical Accreditation and Licensure

The University of Washington School of Medicine is approved by the Association of American Medical Colleges and by the Council on Medical Education and Hospitals of the American Medical Association.

Admission to the practice of medicine in any state is conditional upon the requirements of a state board of examiners. Admission to practice in the state of Washington is dependent upon the candidate's having an M.D. degree, completing a one-year rotating internship, and passing the basic science and licensing examinations. For candidates who are already licensed to practice in another state, the licensing examination may be waived by reciprocity with that state or with the National Board of Medical Examiners. Completion of the basic science requirements may be arranged through reciprocity with the National Board of Medical Examinations and with certain specified states.

Further information about licensure requirements may be obtained from the Washington State Division of Professional Licensing, Olympia, Washington 98595.

Postgraduate Medical Education

Internships and Residencies

Internships of one-year duration in clinical medicine are available at the University Hospital, Harborview Medical Center, and the Children's Orthopedic Hospital and Medical Center. All clinical departments participate in the training program for interns in one or more of these institutions. Residency training programs are available in the clinical fields of anesthesiology, cardiology, general surgery, medicine, neurology, neurosurgery, obstetrics, gynecology, orthopedic surgery, pathology, pediatrics, rehabilitation medicine, psychiatry, radiology, and urology. The residency programs vary in duration from two to five years and are integrated, providing for rotation through several of the University-affiliated hospitals during this period of training.

Postdoctoral Fellowships and Traineeships

Postdoctoral fellowships and traineeships are available in all departments. They are designed to provide further research and teaching experience for the advanced student who has already obtained his Ph.D. or M.D. degree.

For further information, consult the professional bulletin of the School of Medicine.

Continuing Medical Education

Director

John N. Lein

E305 Health Sciences Building

The School of Medicine functions as a center for continuing medical education for physicians and other health care personnel in the region. The Division of Continuing Medical Education offers approximately twenty-nine short courses each year in Seattle and other communities, and works with the Washington/Alaska Regional Medical Program and the Washington State Medical Association to develop, implement, and coordinate new continuing education programs.

One- to five-day courses to provide practicing physicians and allied health personnel with an opportunity to review fundamental concepts and to keep abreast of recent advances in diagnosis and treatment are given in the spectrum of medical specialties and include a family practice review. The programs are developed and presented by clinical and basic science faculty and are offered in cooperation with the Washington State Department of Social and Health Services and other governmental agencies, physicians' organizations, and voluntary organizations.

Refresher courses are given for health professionals such as medical technologists and physical and occupational therapists.

A descriptive brochure on each course, giving dates, faculty, enrollment limitations, and tuition fee, is available from the Office of Continuing Medical Education.

Physicians are welcome to participate in the regular rounds and conferences scheduled at the University Hospital and clinics and at the hospitals affiliated with the University's teaching program.

Development and coordination of innovative continuing education activities in the region are effected through a committee of practicing physicians who are jointly appointed by the School of Medicine, the Washington/Alaska Regional Medical Program, and the Washington State Medical Association. The Continuing Education coordinators advise the sponsoring organizations on educational needs, implement programs in their communities, and help to select topics and instructors for medical television courses produced by the Information and Education Resource Support Unit of the Washington/Alaska Regional Medical Program. The courses are broadcast on state-wide educational television on Tuesday mornings and evenings during the academic year.

The three organizations also cosponsor a Postgraduate Preceptorship Project that arranges individualized refresher training programs for physicians at the University Hospital, affiliated teaching hospitals, and at community hospitals in Seattle, Spokane, Tacoma, and Yakima.



ANESTHESIOLOGY

Chairman

John J. Bonica

RR444 University Hospital

Professors

John J. Bonica, Rudolph H. de Jong, B. Raymond Fink, John M. Hansen, Thomas F. Hornbeck

Associate Professors

Toshio J. Akamatsu, Gerald D. Allen, Frederick W. Cheney, Jr., Felix G. Freund, Anibal H. Galindo, William F. Kennedy, Jr., Wayne E. Martin, Richard J. Ward, Peter M. Winter

Assistant Professors

Geordis M. Aasheim, David Amory, Peter Berges, Stefano Brena, Marlene Eng, Gaither B. Everett, William G. Horton, Javad Merati, Terence Murphy, Eugene Pflug, Gerald H. Pollack, Kuang C. Wong, Steven R. Wyte

Instructors

S. Carole Burnham, Steven H. Butler, Josephine Davis

The Department of Anesthesiology has broad responsibilities for the teaching of medical students throughout their four years of undergraduate training. Departmental faculty participate in the teaching of applied anatomy to students during their first year. During the second year, faculty who also have joint appointments in physiology and pharmacology participate in teaching of students in these areas. During the clinical years, the students are taught the basic principles of anesthesiology, including artificial respiration and resuscitation. Instruction is provided by means of lectures, conjoint courses, and clinical clerkships. In addition, the Department carries out an active training program for interns and residents in anesthesiology and affords residents in surgery, obstetrics, and oral surgery experience in anesthesiology.

BIOCHEMISTRY

Chairman

Hans Neurath

J405 Health Sciences Building

Professors

Earl W. Davie, Edmond H. Fischer, Milton P. Gordon, Benjamin D. Hall, Alex Kaplan, Brian J. McCarthy, Hans Neurath, Kenneth A. Walsh

Associate Professors

Paul Bornstein, David R. Morris, William W. Parson, Bennett M. Shapiro, David C. Teller

Assistant Professors

Breck E. Byers, David A. Deranleau, G. Michael Hass (acting), Stephen Hauschka, Mark Hermodson (acting),

Jon R. Herriott, John M. Keller, Philip H. Petra, E. T. Young II

Associates

Lowell H. Ericsson, Betty McConaughy, Richard B. Olsgaard

Research Associate Professor

Koiti Titani

Research Assistant Professors

Kazuo Fujikawa, Anna Pocker

Lecturers

Stephen Bard, Roger Wade

Biochemistry, the study of the chemistry of life processes, is one of the rapidly expanding branches of biological sciences. The Department of Biochemistry offers graduate degree programs leading toward a degree of Master of Science or Doctor of Philosophy. In addition, programs are offered at the postdoctoral level and the undergraduate level (particularly undergraduate students enrolled in the curriculum in molecular and cellular biology) for any regularly enrolled student or for professional students in Medicine, Dentistry, and Pharmacy.

Graduate Programs

Graduate Program Adviser

William W. Parson

J405 Health Sciences Building

Admission

The basic requirements for admission to the Department of Biochemistry are one year of organic chemistry, one year of physics, one year of physical chemistry, including laboratory, and mathematics through integral calculus. Students must also meet the general admission requirements of the Graduate School. The course of advanced study is designed to give each student a firm foundation upon which to base further professional progress. In the first year of academic work most students attend courses in biochemistry and in related fields such as advanced chemistry, genetics, or microbiology. In the second and succeeding years, an increasing amount of time is devoted to research and to independent study. Each student is required to gain teaching experience, usually during part of the first and second years. Most students require approximately four years past the bachelor's degree to fulfill the requirements for the Ph.D. degree. Students entering with advanced training in biochemistry may complete their requirements in a shorter period of time.

Master of Science

Although the Department of Biochemistry does not have a formal program that terminates in the master's degree, under certain circumstances students seeking the master's degree are accepted.

Doctor of Philosophy

The Department of Biochemistry offers an advanced program leading to the Ph.D. degree. This graduate program prepares students for professional careers in universities and colleges, in research institutes, in medical schools and hospitals, and in government laboratories, such as those of the National Institutes of Health.

Dissertation research is carried out under the guidance of members of the graduate faculty in biochemistry. The laboratories of the Department of Biochemistry are excellently equipped for modern biochemical research.

Financial support is available to students in good standing throughout their graduate careers in the form of traineeships and assistantships. For further information, inquiring students should request from the Department of Biochemistry the pamphlet describing the graduate program in Biochemistry.

BIOENGINEERING

Director

Robert F. Rushmer
Aerospace Research Laboratory

Assistant Director for Engineering

Curtis C. Johnson
Aerospace Research Laboratory

Assistant Director for Health Sciences

H. Fred Stegall
G213 Health Sciences

Center for Bioengineering Staff

Allan S. Hoffman, Research Professor; John E. Chimoskey, Lee L. Huntsman, Steve L. Johnson, Research Assistant Professors; Sam L. Sparks, Instructor; Donald W. Baker, Technical Director; Graham L. Duff, Assistant Professor of Electrical Engineering

Graduate Student Advisers

Colin Daly, Assistant Professor, Mechanical Engineering; Allan S. Hoffman, Professor, Chemical Engineering and Bioengineering; Gordon Oates, Associate Professor, Aeronautics and Astronautics; Robert Pinter, Assistant Professor, Electrical Engineering; D. H. Polonis, Professor, Mining, Metallurgical, and Ceramic Engineering; Maurice Robkin, Associate Professor, Nuclear Engineering; Charles Sleicher, Professor, Chemical Engineering

Bioengineering is a new multidiscipline that presages dramatic changes in both biology and medicine through the application of engineering science and technology. Bioengineering is a modern vehicle by which engineers and health scientists can be brought together in productive collaboration for solution of both basic and

practical problems. At the University of Washington, a bioengineering program has emerged with an unusually comprehensive approach, involving active cooperation between faculty in many different departments in the College of Engineering and in a broad spectrum of the Health Sciences Division. A balanced program has been developed through appropriate emphasis on both pure and practical research and development, including acquisition of new knowledge, analysis of quantitative data, development of new nondestructive diagnostic instruments, and applications of engineering techniques to patient care.

Programs of Study

The strong research base described above has provided the ingredients necessary to build training programs of high quality. Training opportunities include provisions for training of engineering students for Bachelor of Science, Master of Science, and Doctor of Philosophy degrees. Since the program is diverse and multidisciplinary, the graduate-study programs are characterized by flexibility without sacrifice of high standards. (See the "Interschool or Intercollege Program" description in the *College of Engineering* section for more information.

Postdoctoral Training and Research Experience

Diverse collaborative projects involving engineering and health sciences faculty provide many opportunities for training and experience for engineers, health scientists, and basic medical scientists with advanced degrees.

BIOLOGICAL STRUCTURE

Chairman

Newton B. Everett
G511 Health Sciences Building

Professors

Richard J. Blandau, Newton B. Everett, Lyle H. Jensen, John H. Luft, George F. Odland, Edward C. Roosen-Runge

Associate Professors

Herbert K. Kashiwa, James K. Kohler, Earl P. Lasher, John W. Prothero, Cornelius Rosse, Julia G. Skahen, M. Roy Schwartz, John W. Sundtsen, Daniel G. Szollosi

Assistant Professors

Stevan H. Broderson, Penelope W. Coates, Edward M. Eddy, Daniel O. Graney, Barbara Landau, Raymond D. Lund, Mark A. Nameroff, Thomas A. Stebbins, Lesnick E. Westrum

Research Professor

Edward A. Boyden

Research Associate Professor

Ruth E. Rumery



Research Associates

Jonathan C. Hanson, John M. Hodsdon, Penelope Rosse, Barbara Szubinska-Luft, Isao Tsutsui, Keith D. Watenpaugh

Lecturer

Alexander I. Hamilton

In the Department of Biological Structure, courses are offered that comprise all levels of structural organization of the body, from the gross to the molecular.

Graduate Programs

Graduate Program Adviser

John W. Prothero

G515A Health Sciences Building

The traditional major fields of anatomy are represented in the Department by three divisions: Gross Anatomy and Neuroanatomy, Growth and Development, and Histology. The submicroscopic and molecular levels are represented by the Division of Ultrastructure.

In addition to courses for students in medicine, dentistry, dental hygiene, nursing, physical therapy, and occupational therapy, a graduate program is offered to provide the background necessary for pursuing a professional career in a variety of fields relating to the morphological sciences, e.g., anatomy, biology, and biophysics. Students who intend to work toward a degree of Master of Science or Doctor of Philosophy must meet the requirements of the Graduate School as outlined in the *Graduate Study* section of this catalog.

Continuous Course

Gross Anatomical Dissection. Physicians who desire additional individual experience in the dissection of the entire cadaver or parts thereof may make arrangements through the Division of Continuing Medical Education and the Department of Biological Structure. Laboratory space and anatomical material will be provided (no staff participation). The fees are in proportion to the amount of gross material supplied.

BIOMEDICAL HISTORY

Chairman and Graduate Program Adviser

Charles W. Bodemer

E311 Health Sciences Building

Professor

Charles W. Bodemer

Assistant Professor

Phillip R. Sloan

Instructor

James C. Whorton

The history of medicine and biology represents an integral part of the history of western civilization. Study of

the history of the biomedical sciences provides simultaneously a greater understanding of these sciences and a heightened awareness of their relation to the social, economic, philosophic, and religious factors influencing and influenced by them at different times and places during their development. The biomedical sciences lend another dimension to history valuable to the scientist and nonscientist alike.

The Department of Biomedical History offers a program of studies leading to the degree of Master of Arts. Its courses and research sponsorship in the history of medicine and biology are available to undergraduates, medical students, graduate students, and postdoctoral fellows. Approximately twelve hundred rare books relevant to the development of the modern medical sciences provide a valuable adjunct to the teaching program.

CONJOINT COURSES

Conjoint courses are offered cooperatively by departments in the School of Medicine. They are designed to integrate basic medical training with clinical work and, in some cases, to integrate basic medical training in two or more fields. For the list of courses, see the *Description of Courses* section of this catalog.

EXPERIMENTAL ANIMAL MEDICINE

Chairman

William C. Dolowy

303 Showboat Apartments

Professors

William C. Dolowy, James A. Henson, Vernon T. Riley, Theodore C. Ruch

Associate Professor

Norman S. Wolf

Assistant Professors

Mark C. Keyes, Larry J. Swango, Gerald L. Van Hoosier, Jr.

Research Assistant Professor

Joseph Roberts

Instructor

Kent H. Smith

This newly created department is responsible for the instructional, service, and research programs in experimental animal medicine.

Experimental animal medicine encompasses all areas of biomedicine that relate directly to the various animal

species used in research. Investigation begins with normal values and environmental health factors and proceeds through diagnosis and treatment of disease; it includes investigation of physiological and pathological processes of animal diseases as models of related human forms of illness. For development of these different areas of study, the Department is divided into three sub-units: (1) Research Division, (2) Teaching Division, and (3) Service Division, consisting of the Diagnostic Laboratory and Clinical Veterinary Services.

For further information, see the professional bulletin of the School of Medicine.

FAMILY MEDICINE

Chairman

T. J. Phillips, M.D.

C504 Health Sciences Building

Associate Professor

T. J. Phillips, M.D.

Assistant Professor

John A. Lincoln, M.D.

Instructors

William M. Cole, C. Kent Smith

Family Medicine is the discipline concerned with continuing and comprehensive care of individuals and their families. The prime instructional goal of this Department is to educate and train physicians who will apply the knowledge and skills of this and other medical disciplines in family practice. Implicit in this goal is the necessity for continual development of new knowledge and its application in the clinical activities of the Department.

The Department of Family Medicine was founded in 1971 and is involved with instruction of medical students in several ways. These include presentations in the basic curriculum of the first two years, elective courses open to all medical students, and responsibility for developing and administering the Family Physician Pathway curriculum. A graduate Residency Program in Family Practice, beginning in 1972, provides training consistent with the standards of the American Board of Family Practice, the American Academy of Family Physicians, and the Council on Medical Education of the American Medical Association.

LABORATORY MEDICINE

Chairman

Paul E. Strandjord
Pacific Annex 3

Professors

Gian E. Chatrian, Alex Kaplan, Paul E. Strandjord

Associate Professors

J. David Heywood, C. George Ray, C. Evans Roberts

Assistant Professors

Kathleen J. Clayson, James Detter, Bruce Gilliland, Gottfried Schmer, Fritz Schoenknecht

Instructors

Jan Fry, Margaret Kenny, Carol LeCrone, Lee Anne McGonagle, Helen M. Pollock, Vidmantas Raisys, LaVerne Szabo, Robert J. Wilkus

Research Associate Professor

Elizabeth K. Smith

Lecturer

Peggy V. Hamernyk

Research Associate

Ettore Lettich

The Department of Laboratory Medicine includes divisions of clinical chemistry, hematology, microbiology, coagulation, immunology, genetics, computer technology, and electroencephalography and neurophysiology. In addition to courses for medical students, the Department offers a curriculum leading to the Bachelor of Science in Medical Technology degree.

MEDICAL TECHNOLOGY

Undergraduate Program

Director

Carol N. LeCrone
Pacific Annex 3

Bachelor of Science in Medical Technology

The Medical Technology program is a four-year college program, supervised by the College of Arts and Sciences in the freshman and sophomore years (pre-professional) and by the Department of Laboratory Medicine, School of Medicine, in the junior and senior years (professional).

The program is approved by the Council on Medical Education and Hospitals of the American Medical Association. Graduates are eligible for, and are encouraged to take, the examination of the Board of Registry of the American Society of Clinical Pathologists to become registered medical technologists.

MEDICINE

Chairman

Robert G. Petersdorf
RR516 University Hospital

Professors

George N. Aagaard, Edwin L. Bierman, Robert A. Bruce, John Butler, Leonard A. Cobb, Harold C.



Dodge, Robert S. Evans, Clement A. Finch, Stanley M. Gartler, William M. M. Kirby, Seymour, J. Klebanoff, Claude Lenfant, Arno G. Motulsky, Wil B. Nelp, George F. Odland, C. Alvin Paulsen, Robert G. Petersdorf, Clayton Rich, Cyrus E. Rubin, Belding H. Scribner, August G. Swanson, E. Donnell Thomas, Marvin Turck, Paul P. VanArsdel, Robert L. Van Citters, Wade Volwiler, Robert H. Williams

Associate Professors

Harry Beaty, Benjamin Belknap, John R. Blackmon, Paul Bornstein, Ralph E. Cutler, John Ensink, Philip J. Fialkow, Gilbert Frank, Charles J. Goodner, William L. Green, Laurence Harker, Robert Hillman, John Holcenberg, Willard P. Johnson, J. Ward Kennedy, Mart Mannik, Thomas E. Morgan, Frank Parker, James J. Plorde, Charles E. Pope, Daniel Porte, Loring B. Rowell, David Saunders, David Simpson, Donal Sparkman, William Stahl, George Stamatoyannopoulos, S. Mark Sumi, Phillip D. Swanson, Francis C. Wood, Jr.

Assistant Professors

John Adamson, Marvin E. Ament (acting), William P. Arend, R. Palmer Beasley, Melvin Belding, Christopher Blagg, C. Dean Buckner, Coldevin Carlson, Hugh Clark, James D. Cook, Wayne E. Crill, F. Kingsbury Curtis, Robert C. Davidson, Charles Dohner, Donald F. Farrell, Alexander Fefer, H. Kenneth Fisher, Wilfred Fujimoto, Donald Funk, Bruce Gilliland, Robert Gotshall, John R. Green, Robert J. Griep, Elsie Haff, Glen Hamilton, Karl B. Hammermeister, William R. Hazzard, King K. Holmes, Stephen L. Johnson, Victor Lavis, John McDonough, John Milner, John A. Murray, Paul E. Neiman, Gilbert S. Omenn, John L. Petersen (acting), Leonard Quadracci, Donald J. Sherrard, Stanley Shimoda, John M. Short, Fredric Silverblatt, Peter A. Simkin, Nicholas Sinaly, Sherill Slichter, Rainer Storb, Kent M. Sullivan, Heinrich Tenckhoff, J. Findlay Wallace, Robert Wills, Robert Woodson, Stephen R. Yarnall

Instructors

Vicki Dell Boyd (acting), John D. Brunzell, Richard Buchanan, Ray A. Carlsen, Charles H. Chestnut, James J. Coatsworth, David Dale, Duane H. Espeland, Leroy Fass, Wendell Fleet, George Gey, Harold Glucksberg, Brian Goodell, Kenneth L. Gould, Robert Haining, Michael Hlastala (acting), Peter Kane, Harold Kennedy, Armando Linder, Kirk Lipscomb, T. Kevin O'Brien, James T. Ogilvie, Nancy Purcell, R. Paul Robertson, Terry Rogers, Thomas G. Rudd, Frederick C. Saunders, Thomas K. Sawyer, Douglas Stewart, Ariana Students, Donald Wadlund, Robert J. Wilkus, Timm Zimmermann

Lecturers

Anna Browder, William B. Mitchell, Burness G. Wenberg

Visiting Scientists

Gordon Dower, Robert W. Stout

Research Professors

James Burnell, Eloise R. Giblett, John Glomset, Akira Yoshida

Research Associate Professor

Patrick Goldsworthy

Research Assistant Professors

David Baylink, Arthur Camerman, Terrence G. Christopher, Roger Donahue, Kenneth Kraning, Jon Werge-dal

Research Instructors

Ward Harris, Donna Koerker, Yvonne Naum, Virginia Richmond, Amelia Schultz

Research Associates

Jean S. Bryant, Reginald Clift, James J. Cole, Robert J. Cullen, Thomas J. Cullen, Melvin B. Dennis, Arden W. Forrey, Morris Frimer, Fusako Kusumi, Lynn A. Larsen, Norma Maloney, Daniel G. Parrish, Dzidra E. Razevska, John J. Sipe

An active teaching program is carried on at the Veterans Administration, U.S. Public Health Service, and University hospitals, Firland Sanitarium, and Harborview Medical Center for medical students, interns, medical residents, and postdoctoral research fellows. More than forty medical residents rotate through the hospitals, and there are more than eighty postdoctoral research fellows working in various divisions of the Department.

MICROBIOLOGY

Chairman

John C. Sherris
G305 Health Sciences Building

Professors

Howard C. Douglas, Charles A. Evans, Stanley Falkow, Neal B. Groman, Erling J. Ordal, John C. Sherris, Russell S. Weiser, Helen R. Whiteley

Associate Professor

Eugene W. Nester, C. George Ray, C. Evans Roberts

Research Associate Professor

Velma C. Chambers, Ingegerd Hellstrom

Assistant Professors

Nancy N. Pearsall, Fritz D. Schoenknecht, James T. Staley

Instructor

Helen M. Pollock

Research Associate
Sylvia Pollack

Lecturers
Glover W. Barnes, Dorothy I. Cramer, Carol Laxson,
Ramona Memmer, Dale Parkhurst, Joel N. Portman

Microbiology is the science of microscopic organisms, including algae, bacteria, fungi, protozoa, rickettsia, viruses, and yeast. It is concerned with their form, structure, reproduction, physiology, and metabolism of microorganisms and of their role in nature. The associated science of immunology forms an important part of the work of the Department. Major departmental interests include study of the general biological characteristics of microorganisms, their role in ecology, their parasitic and disease-producing activities, and the role of the immune response in infectious diseases, hypersensitivity states, and in resistance to tumors.

Undergraduate Programs

In addition to courses for health sciences professionals, the Department of Microbiology offers programs in microbiology leading to a bachelor's degree in the College of Arts and Sciences. (See *College of Arts and Sciences* section.) The undergraduate degree prepares the individual for the responsibilities of a microbiologist upon graduation and provides him with the background for advanced study. An honors program leading to a bachelor's degree with honors or distinction in microbiology is available for qualified undergraduates (see *College of Arts and Sciences* section, Honors in Microbiology).

Graduate Programs

Graduate Program Adviser
Howard C. Douglas
H309 Health Sciences Building

Students who intend to work toward a degree of Master of Science or Doctor of Philosophy must meet the requirements of the Graduate School as outlined in the *Graduate Study* section. The fields of specialization for advanced degrees are general and medical bacteriology, immunology, virology, and microbial physiology and genetics. Course requirements vary according to the field chosen.

NEUROLOGICAL SURGERY

Chairman
Arthur A. Ward, Jr.
RR744 University Hospital

Professors
Gian E. Chatrian, Ralph M. Reitan, Arthur A. Ward, Jr.

Associate Professors
William A. Kelly, George A. Ojemann

Assistant Professors
William H. Calvin, Eberhard E. Fetz, A. Basil Harris,
Joan S. Lockard, John D. Loeser, Raymond D. Lund,
Lesnick E. Westrum

Instructors
Walter L. Bailey, John Hered, John A. Kusske, John T. O'Neal

Research Assistant Professors
Thomas J. Boll, June L. deVito

Research Associate
Ettore Lettich

The Department of Neurological Surgery is concerned with teaching and research in the entire spectrum of surgical diseases of the central and peripheral nervous system. Instruction in this area is provided for medical students and postgraduate physicians.

The Department's medical student instruction includes participation in the neurosciences core course as well as the required and elective courses for medical students who have completed core requirements. A neurological surgery inpatient clerkship two weeks in duration is one of the requirements of the behavioral pathway. In these clerkships, the student participates with the other members of the professional staff in the diagnostic workup and pre- and post-operative care of neurosurgical patients. Clinical facilities for this clerkship are provided at the University Hospital, Harborview Medical Center, and Veterans Administration Hospital. In addition, a more extensive four-week neurosurgical clerkship is also available. There is also a clinical elective in electroencephalography. The Department's neurosciences research seminar is available as a basic science elective for those students interested in correlating research and clinical problems in the nervous system.

Selected medical students may also elect research experience within the Department of Neurological Surgery. The departmental research facilities are housed in the Medical Research Tower of the University Hospital where investigations are under way in all types of neurophysiology, behavioral research with primates, and light and electron microscopic examination of the anatomy of the nervous system. Particular research interests include the basic aspects of animal models of such disease processes as epilepsy, including confirmation from human material. Interdisciplinary arrangements with the Departments of Physiology and Biophysics and of Biological Structure, and the Division of Bioengineering are maintained whereby selected students from these related basic science departments can



participate in the multidisciplinary research activity in the Department of Neurological Surgery.

In addition to the undergraduate instruction, a fully certified residency program in neurological surgery, with particular emphasis on preparation for careers in academic neurosurgery, is available for selected post-graduate physicians.

OBSTETRICS AND GYNECOLOGY

Chairman

Walter L. Herrmann

BB615 University Hospital

Administrative Officer

Leon R. Spadoni

BB639 University Hospital

Professors

David C. Figge, Walter L. Herrmann, Nathaniel N. Wagner

Associate Professors

John T. Conrad, Jack L. Gibson, W. LeRoy Heinrichs, John N. Lein, Leon R. Spadoni, Kent Ueland

Assistant Professors

Julius C. Butler, Jr., Lawrence R. Donohue, Philip H. Petra, Louis A. Vontver

Lecturer

Mavis Vogel

Research Assistant Professors

Suzanne H. Conrad, Roger P. Donahue, Ronald J. Gellert, Toru Tabei

The Department of Obstetrics and Gynecology encompasses the study of normal and abnormal human reproduction: growth and development of the fetus, normal and complicated obstetrics, and surgical and medical diseases of the female reproductive system, including endocrinology. The Department teaches at three main education levels: (1) medical students who seek a basic core of knowledge and understanding of obstetrics and gynecology; (2) doctors who will become specialists in the field through a clinical residency program; and (3) practitioners and specialists who participate in continuing education seminars and research fellowship programs. Major areas of research include the normal and abnormal endocrinology and physiology of pregnancy, the reproductive cycle, and fertility regulation. The Department maintains clinical services at University Hospital, Harborview Medical Center, the Virginia Mason Clinic, and at the U.S. Public Health Service Hospital as a part of its teaching facilities.

OPHTHALMOLOGY

Chairman

Robert E. Kalina

RR806 University Hospital

Professor

John L. Downer

Associate Professors

Robert E. Kalina, Sidney Futterman

Assistant Professors

Anita Hendrickson, Jennifer S. Lund

Instructors

P. O. Kramar, Mark Zorn

This Department is responsible for the instructional and research programs in diseases of the eye and related structures.

ORTHOPEDICS

Chairman

D. Kay Clawson

BB417 University Hospital

Professors

D. Kay Clawson, Donald R. Gunn

Associate Professors

F. Richard Convery, Louis R. Fry, Theodore K. Greenlee

Assistant Professors

James G. Garrick, Sigvard T. Hansen

Research Assistant Professor

John L. Nilles

Instructors

Thomas L. Gritzka, David J. LaGasse, John A. Neufeld, Richard A. Silver

In addition to instruction for medical students, the Department of Orthopedics participates in the teaching program of students in the Schools of Nursing and of Dentistry, and in the Divisions of Physical and Occupational Therapy. A fully approved residency, with opportunities to carry out fundamental research, is offered. Residents may work toward the Master of Science degree by meeting the requirements of the Graduate School.

OTOLARYNGOLOGY

Chairman

James A. Donaldson

RR205 University Hospital

Professor

James A. Donaldson

Associate Professor

H. Jörgen Holmquist

Assistant Professors

Joseph Kimm, Josef M. Miller, Joseph Walike

Instructors

Richard E. Carlson, Charles H. Lewis, Winsor V. Morrison, James L. Parkin, Michael Ross, Jack M. Snyder

The Department of Otolaryngology is responsible for the teaching of the principles and practical aspects of the diagnosis and treatment of diseases of the ear, nose, throat, and larynx to medical students during their first, second, third, and fourth years of training. In addition, the Department assumes responsibility for the organization and supervision of a residency training program and provides consultation and instruction to interns and members of the residency training programs at the University of Washington.

PATHOLOGY

Chairman

Earl P. Benditt

D511 Health Sciences Building

Professors

Ellsworth C. Alvord, Jr., Earl P. Benditt, Karl E. Hellstrom, David Lagunoff, George M. Martin, N. Karle Mottet, Russell Ross, Edward A. Smuckler, Leo M. Sreebny

Clinical Professor

Gordon D. LaZerte

Associate Professors

J. Bruce Beckwith, H. Thomas Norris, Roy C. Page, Dennis Reichenbach, Cheng-Mei Shaw, Gary E. Striker, S. Mark Sumi, Rudolf Vracko, Norman S. Wolf

Clinical Associate Professor

S. Allison Creighton

Assistant Professors

Edward A. Barker, W. Ellis Giddens, Harold E. Hall, Paul W. Kohnen, Abraham I. Schweid, Greta Tyson, Louise Wiegstein

Clinical Assistant Professor

William B. Hamlin

Research Assistant Professor

Nils Eriksen

Instructors

Thomas Huang, Richard W. Leech, Kenneth Lerner, Ned S. Moss

Pathology is both a basic biological science and a specialty of medicine. As a basic science, it deals with the

natural history and mechanisms of initiation and expression of disease processes. In its broadest sense, pathology encompasses the entire animal and plant kingdoms. The main interests of the Department are diseases of vertebrates, especially of man and other mammals. The principle aim of the pathologist is to understand disease manifestations and processes in whatever terms are required. Therefore, the techniques of the pathologist may range from those of the physicist and physical chemist through those of the physiologist to the realm of the epidemiologist. Present emphasis in the Department is on cellular and molecular pathology, analysis of disease by light and electron microscopy, histochemistry and cytochemistry, analytical biochemistry, cell and organ culture, and immunology.

Courses are offered for medical students, dental students, students of medical technology and other allied health sciences professions. A program leading to a Doctor of Philosophy degree in the field of experimental pathology is offered for both predoctoral students and those with degrees in medicine, dentistry, or veterinary medicine.

Central teaching and research facilities are located in the Health Sciences Building and University Hospital. Closely associated are the personnel and facilities of Harborview Medical Center, Veterans' Administration Hospital, United States Public Health Service Hospital, Children's Orthopedic Hospital and Medical Center, and Swedish Hospital.

Research programs in the Department include studies of the basic pathological process involved in such diseases as arteriosclerosis, cancer, and inflammation (including allergic diseases), and of the injurious effects of various drugs, toxins, foods, and things derived from the environment. Diseases of certain systems, including such organs as the brain, heart, blood vessels, kidneys, lungs, liver, and skin, are studied with appropriate specialists in these areas. The approach to the study of these basic disease entities and specific systemic diseases utilizes the concepts and techniques of modern cell biology. The combination of modern morphologic techniques with chemical and functional studies is emphasized throughout.

Graduate Programs

Graduate Program Adviser

Earl P. Benditt

D511 Health Sciences Building

Master of Science and Doctor of Philosophy

Programs in the field of experimental pathology that lead to the Master of Science and Doctor of Philosophy degrees are offered through the Graduate School.



Graduates of the program are qualified for research and academic appointments in medical, dental, or veterinary schools, as well as in experimental pathology in government laboratories and private industry, particularly in the pharmaceutical industry.

Postdoctoral Programs

Postdoctoral traineeships in experimental pathology include specialized programs in renal pathology, electron microscopy, immunopathology, tumor biology, genetic pathology, connective tissue and vascular disorders, inflammation, and developmental pathology and neuropathology.

Residency Training Program

Director

N. Karle Mottet

BB232 University Hospital

The Department supervises an internship and residency training program in anatomic and clinical pathology for qualified medical doctors. Persons who complete the residency program are eligible for certification by the American Board of Pathology.

PEDIATRICS

Chairman

Ralph J. Wedgwood

RR314 University Hospital

Professors

Irving N. Berlin, Robert W. Deisher, Warren G. Guntheroth, Vincent C. Kelley, Robert F. Labbe, Bruce Mackler, Thomas H. Shepard, David B. Shurtleff, David Smith, Nathan J. Smith, Ralph J. Wedgwood

Associate Professors

Bruce Beckwith, Abraham Bergman, Starkey D. Davis, Irvin Emanuel, C. Benjamin Graham, Alan Hodson, Robert Igo, Beverly C. Morgan, Donald Pious, C. George Ray, William O. Robertson, Michael Rothenberg, Rogelio Ruvalcoba, Jane Schaller, C. Ronald Scott

Assistant Professors

Coldevin Carlson, Moira Feeney, Patricia Hayden, Vanja Holm, Irving Kohlberg, Ronald J. Lemire, Colby Parks, Jack Raskin (acting), Stephen Sulzbacher, Richard Wennberg, Waldemar Wenner, David Woodrum

Instructors

Ragna Boynton, Roscius Doan, Robert Hunter, Frederick Lamson, Hans Ochs, Theodore Regimbal, Marvin Scotvold, Clifford Sells, Diana Tattoni, Nick Wiltz, Lanita Wright

Research Associate Professor

Elizabeth K. Smith

Research Assistant Professor

Shi-Han Chen

Research Instructor

Albert Mills

Research Associates

Mary Pratt, Thomas Standaert, Doris Tippit

Lecturers

Mary Campbell, Norris Haring, Margaret Hill

Pediatrics involves the study of the physical and behavioral development of man, in health and disease, from conception to maturity. Alterations of the developmental process (from genetic and environmental causes), the changing response to stress during maturation, and the effect of nutritional, physical, and emotional stress on development, are the manifestations of child health of primary pediatric concern. The holistic approach to the ontogenetic and ecologic changes is intrinsic to understanding the changes (both of disease and function) occurring throughout the life span of man.

Instruction is provided through conjoint courses, lectures, conferences, clerkships, and electives.

PHARMACOLOGY

Chairman

James M. Dille

F421 Health Sciences Building

Graduate Program Adviser

Donald C. Dyer

Professors

George N. Aagaard, Rudolph H. de Jong, James M. Dille, Akira Horita, Ted A. Loomis

Associate Professors

Lawrence M. Halpern, John S. Holcenberg, Ivens A. Siegel, Frank F. Vincenzi

Assistant Professors

David W. Amory, Paul W. Davis, Donald C. Dyer, John S. Holcenberg, Mont R. Juchau, Kuang C. Wong

Research Assistant Professor

Arthur Camerman

Research Instructor

Jane A. Collins

Senior Research Associates

Ellen D. Gough, Dom V. Finocchio

Pharmacology deals with the mechanisms whereby modification of physiological function is produced by drugs, and with the application of these drugs to the relief and treatment of disease.

The Department of Pharmacology provides courses for medical, dental, and pharmacy students and for those doing graduate work in these fields. Students who intend to work toward a degree of Master of Science or Doctor of Philosophy must meet the requirements of the Graduate School as outlined in the *Graduate Study* section of this catalog and must also meet the special requirements of the Department of Pharmacology. Prospective candidates must present a bachelor's degree with a major in any of the sciences, such as zoology, chemistry, physics, pharmacy, psychology, or physiology. Applicants should communicate with the Graduate Program Adviser before registration.

PHYSIOLOGY AND BIOPHYSICS

Chairman

Harry D. Patton
G412 Health Sciences Building

Professors

Arthur C. Brown, Harry D. Patton, Thomas F. Hornbein, Claude J. Lenfant, Theodore C. Ruch, Allen M. Scher, Orville A. Smith, Arnold L. Towe, Robert L. Van Citters, C. A. Wiederhielm, J. Walter Woodbury, Allan C. Young

Associate Professors

John T. Conrad, Eric O. Feigl, Charles C. Gale, Albert M. Gordon, Bertil Hille, Theodore H. Kehl, Thelma T. Kennedy, Loring B. Rowell, David P. Simpson, Julia G. Skahen, William L. Stahl, Charles F. Stevens, Davida Y. Teller

Assistant Professors

George L. Brengelmann, William H. Calvin, Wayne E. Crill, Eberhard E. Fetz, Albert F. Fuchs, Joseph C. Kimm, Barbara L. Landau, Erich S. Luschei, Josef M. Miller, Charles E. Stirling, Henry J. VanHassel, Barbara C. Walike

Instructor

Louis G. D'Alecy

Research Assistant Professor

Fredric A. Harris

Research Associates

Judith R. Hildebrant, Cyril S. Ito

Research Instructors

Maria A. Biedenbach, Donna T. Koerker, Don D. Stromberg

Lecturers

Winifred J. McGuire, E. Renella Taylor

Physiology deals with the processes, activities, and phenomena incidental to and characteristic of life and living organisms. Based upon zoology, physics, chemistry, and mathematics, physiology interlocks closely with the other basic medical sciences—biological structure, biochemistry, pharmacology, and pathology—and with psychology. For this reason, physiology appeals to students with diverse backgrounds and goals. Courses in this field are given for medical, dental, pharmacy, and nursing students, and for graduate students.

Biophysics emphasizes the physical aspects of organs and control systems, studied by the instruments and methods of thinking used by physicists.

Graduate Programs

Graduate Program Adviser

Julia G. Skahen
G205 Health Sciences Building

Admission

Students who intend to work toward a degree of Master of Science or Doctor of Philosophy must meet the requirements of the Graduate School. Students with a bachelor's degree in zoology, psychology, chemistry, engineering, or physics, or with an M.D. degree, are acceptable as prospective candidates for M.S. and Ph.D. degrees.

Graduate students in physiology and biophysics with a medical degree will have their curricula adjusted in accordance with their training.

Programs of Study

In the organization of the graduate program in physiology and biophysics, several specializations within the broad field of physiology are recognized, and the requirements and curricula are different for each, although there is considerable overlapping. The areas of specialization may be described as (1) mammalian physiology; (2) biophysics, for which undergraduate mathematics and physics are prerequisites; (3) physiology of behavior, in which undergraduate psychological training is a prerequisite; (4) cardiovascular physiology, and general and comparative physiology conducted conjointly with the Department of Zoology.

For students wishing a program equally distributed between physiology and psychology, an interdisciplinary Ph.D. degree program in these subjects is administered by the Physiology Psychology Group of the Graduate School. The basic graduate courses include Physiology and Biophysics 410, 411, 412, 413, 414, 415. See *Interdisciplinary Graduate Degree Programs* section.



PSYCHIATRY

Acting Chairman

John L. Hampson
BB869 University Hospital

Professors

Joseph Becker, Irving N. Berlin, John L. Hampson,
Thomas H. Holmes, Merlin H. Johnson, Herbert S.
Ripley, Charles R. Strother

Associate Professors

Cornelis B. Bakker, John E. Carr, Hans O. Doerr,
Kate L. Kogan, Minoru Masuda, Michael B. Rothen-
berg, Lindbergh S. Sata

Assistant Professors

Hubert E. Armstrong, Jr., Douglas M. Bowden, Albert
S. Carlin, Barry A. Nyman, Caroline E. Preston, Ann
P. Streissguth, Muriel King Taylor, William M. Wo-
mack

Instructors

Frank I. Backus, Richard C. Erickson, Jennifer James,
Ronald L. Furedy

Lecturer

Mary M. Campbell

The Department of Psychiatry aims to provide a scien-
tific grasp of psychiatric principles for students of med-
icine, nursing, psychology, social work, education, and
others concerned with human problems. The emphasis
is on the psychological aspects of the total functioning
of the individual. This includes the study of personality
development, with special recognition of the impor-
tance of biologic, environmental, and social interaction
factors for human behavior. Basic knowledge of the
physical basis of the individual's functioning is assumed
and integrated into the study of his behavior in health
and disease.

Instruction in psychiatry is given during each of the
four years of the medical course and is coordinated
and integrated with the various disciplines in medicine.
Thus, from the beginning of his medical career, the
student is stimulated to think in terms of understanding
the totally functioning human being.

RADIOLOGY

Chairman

Melvin M. Figley
SS230 University Hospital

Professors

Melvin M. Figley, Wil B. Nelp, Robert G. Parker, Fred-
eric E. Templeton

Associate Professors

Hans Bichsel, Gerald M. Christensen, C. Benjamin
Graham, Kenneth L. Jackson, Robert S. Leighton,
John W. Loop, Leon A. Phillips, Howard J. Ricketts,
Peter Wootton

Assistant Professors

Arthur J. Gerdes, Mark Hafermann, Rosalind H.
Troupin

Instructors

Charles C. Church, F. Chris Killien, John Lee, Robert
E. Schaefer

Lecturer

Ralph M. Baltzo

Radiology is the branch of clinical medicine that ap-
plies electromagnetic and nuclear radiations to the de-
tection and treatment of disease. In diagnostic radiol-
ogy, the differential absorption of penetrating radiation
is detected by fluorescent crystals (fluoroscopy) or by
photographic emulsions (radiography). The majority of
important diseases have some radiologic expression.
The diagnostic radiologist is, in effect, a general path-
ologist with special methods for nondestructive internal
examination.

Therapeutic radiology depends upon the differential
destruction of neoplastic cells by radiations. Many
forms of cancer are best treated by radiation either for
primary cure or palliation of symptoms. Of necessity,
the therapeutic radiologist is a specialist in dealing with
cancer.

The radiations emanating from disintegrating radio-
active isotopes can be measured in quantity and energy
and plotted spatially in living tissues as well as in
samples of body fluids. Nuclear medicine is that
branch of radiology which concerns itself with isotopes
in organs and metabolic systems for diagnosis and
treatment.

Radiation biology and radiation physics are the basic
sciences related to clinical radiology having to do with
study of the effect of radiations on living systems and
the description of radiation fields in terms of geometry
and intensity. Research in these aspects, including
the development of instrumentation, is basic to progress
in clinical radiology.

The Department of Radiology is represented in each
of these divisions by senior staff with extensive practical
experience. Instruction is provided in each area for
medical students, residents, and other physicians. Cer-
tain courses are open to graduate students. The staff
and its teaching and research activities are represented
in each of the hospitals affiliated with the University.

REHABILITATION MEDICINE

Chairman

Justus F. Lehmann
CC814 University Hospital

Professors

Wilbert E. Fordyce, Justus F. Lehmann, Walter C. Stolov

Associate Professors

Barbara J. Delateur, Arthur W. Guy

Assistant Professors

Marjorie Anderson, Lynn Caldwell, Roy S. Fowler, Jr., George H. Kraft, Jennie A. Lucci, Jo Ann McMillan, Clyde Nicholson, Patricia L. Sand, Bernard C. Simons, Neal Taylor, Martha J. Trotter

Instructors

Rosemarian R. Berni, Rick L. Bollinger, Shelby J. Clayson, Eugen M. Halar, Thaworn Hongladarom, Marian L. Johnson, Gordon Kirkpatrick, Alexander J. Masock, Eleanor P. Nystrom, Kenneth G. Schwarz, Willard S. Snow, John E. Stanwood, Katherine L. Tremain, C. Gerald Warren

Acting Instructor

Darlene M. Hertling

Lecturer

Janet K. Hart

Associate

Donald Pemberton

The Department of Rehabilitation Medicine provides instruction for medical students, interns, and residents in the comprehensive approach to rehabilitation problems. This includes special diagnostic and evaluative procedures; methods and rationale for use of physical therapy, occupational therapy, and other health professions; and advanced investigation of special problems encountered in the field. In addition, the Department conducts a residency training program for the specialty of physical medicine and rehabilitation.

The Department offers curricula leading to the following degrees: Bachelor of Science in Occupational Therapy, Master of Occupational Therapy, Bachelor of Science in Physical Therapy, Bachelor of Science in the field of prosthetics and orthotics, and a Master of Science for residents in physical medicine and rehabilitation who wish to enter the academic field.

Occupational Therapy

Head

Jennie A. Lucci
EE803 University Hospital

Occupational therapy is the treatment, through planned activity, of persons who are physically or mentally ill or disabled by accident, disease, or birth defects. Activities used for treatment include creative and manual arts, recreational, educational, and prevocational activities, and skills of independent daily living.

The Division offers a program leading to the Bachelor of Science in Occupational Therapy degree.

Bachelor of Science in Occupational Therapy

The curriculum in Occupational Therapy is planned to give the student a broad base in the liberal arts and humanities as well as specialized training. Since judgment is basic to effective application of skill and knowledge, the student is encouraged to develop the habits of investigation and continued study.

The program is accredited by the American Occupational Therapy Association and the Council on Medical Education of the American Medical Association.

The trained therapist may look forward to a wide range of employment in rehabilitation centers and hospitals for the physically ill and disabled; in special programs such as public schools for handicapped, socially deprived, or mentally retarded children; in private, state, federal, and community programs for the mentally ill; in self-employment, teaching, and research. Salaries compare with those of other service professions, and with the present critical shortage of qualified men and women for administrative, consultant, research, and teaching positions, the advancement opportunities are excellent.

Admission

Professional preparation includes four years of academic courses and eight months of clinical internship. During the first two academic years, the student is registered in the College of Arts and Sciences as a pre-occupational therapy major. Generally, during this phase, proficiency, distribution, and specific requirements are completed.

Admission requirements to the College of Arts and Sciences for the preprofessional years (freshman and sophomore) are prescribed by the University, and the student should consult the Advisory Office of the College of Arts and Sciences for this information. Students should arrange their current courses of study for admission to that College. Transfer students should consult the Division of Occupational Therapy at the University Hospital to determine their eligibility for the preprofessional program. University of Washington sophomores should take Rehabilitation Medicine 290, with permission from the Division of Occupational Therapy.



Students are admitted to the professional curriculum at the junior level and, among other qualifications, must ordinarily have completed the specific requirements or their equivalent, with a minimum cumulative grade-point average of 2.50.

The final two years of the curriculum must be taken at the University of Washington in the School of Medicine. Entrance to this part of the program is dependent upon the decision of the Advisory and Evaluation Committee for Occupational Therapy. Students who plan to enter the program of study must make application to this Committee before January 1 of the same year. Students are evaluated and admitted on the merits of demonstrated academic abilities and various measured aptitudes. Application forms are available in the departmental office.

Course requirements for the third and fourth years are outlined in the professional bulletin of the School of Medicine.

Physical Therapy

Head

Jo Ann McMillan

BB805E University Hospital

Physical therapists participate in the evaluation of the capabilities and disabilities of patients; they administer treatments to alleviate pain, correct or minimize deformity, and improve the general health status of the individual. Based on knowledge of the patient's condition and the factors influencing it, a treatment program will be developed consisting of teaching a patient to walk or use an artificial limb, teaching him exercises that will help him gain strength or better coordination of movement. Treatment may also center around administering forms of heat, cold, electricity, ultrasound, or massage. It includes teaching the patient, his family, or other personnel procedures for his continuing care. Physical therapists may delegate some functions to supportive personnel who are prepared to assume these responsibilities. Physical therapists receive referrals of patients from licensed physicians and maintain contact with them regarding their progressive care.

After completing an approved physical therapy program, the therapist will find a wide variety of opportunities for employment. Positions are open in general and special hospitals, rehabilitation centers, physicians' offices and clinics, and schools or institutions for handicapped children. Other opportunities exist in the area of home care programs, nursing homes, and other convalescent centers. The experienced therapist may choose to teach in a school of physical

therapy. Research opportunities exist in many of the above-mentioned positions.

The Division offers a program leading to the Bachelor of Science in Physical Therapy degree.

Bachelor of Science in Physical Therapy

The entire program requires a minimum of four college years plus thirteen weeks of clinical affiliation for completion. For the first portion, students enroll for a minimum of two years as pre-physical therapy majors in the College of Arts and Sciences. In addition to taking specific courses preparatory to advanced work, students complete proficiency and distribution requirements. Completion of part or all of the prephysical therapy course work at another college or university is acceptable.

Admission requirements to the College of Arts and Sciences for the preprofessional years (freshman and sophomore) are prescribed by the University, and students should consult the Advisory Office of the College of Arts and Sciences for this information.

The final two years of the curriculum *must* be taken in sequence at the University of Washington in the School of Medicine. Entrance to this part of the program is dependent on the decision of the Advisory and Evaluation Committee for Physical Therapy. Students who plan to enter the third year in the Autumn Quarter must make application to this committee before February 1 of the same year. Applications are available in the departmental office. Currently, a cumulative grade-point average of 2.50 is required for consideration for admission, promotion, and graduation.

Upon completion of two years of professional coursework and thirteen weeks of full-time clinical affiliation, in addition to stated proficiency and distribution requirements, students receive a Bachelor of Science in Physical Therapy degree from the School of Medicine. The program is accredited by the American Physical Therapy Association and the Council on Medical Education of the American Medical Association.

Program Requirements

Proficiency Requirements: These courses should be completed within the first two years—English 171 and 172, or a score of 68 or above on the English composite section of the Washington Pre-College Test, and Mathematics 101 (Intermediate Algebra) or a score of 50 or above on Mathematics Achievement section of the Washington Pre-College Test or present grades of B or better in three high school years of college-preparatory mathematics. Effective July, 1969, the previous foreign language requirement was dropped.

Distribution Requirements: A total of 50 credits must be completed before graduation. These must be distributed in the following way: humanities—20; social sciences—20; other courses outside the major department—10. Selections from the humanities and social sciences must be made from the Distribution List to be found in the *College of Arts and Sciences* section of this catalog. Credits in foreign language courses may be counted toward the humanities requirement. (Natural sciences distribution requirements are met by completion of specific prerequisite courses.)

Specific Prerequisites: To be completed before the third year. *Social Sciences*—Psychology 100 and one additional psychology or psychiatry course. *Natural Sciences*—Biological Structure 301 (General Anatomy); Chemistry 101 (General) and 102 (General and Organic); Microbiology 301 (General); Physics 114, 115, 117, and 118 (lectures and laboratory including mechanics and sound, heat and electromagnetism, light and modern physics); and Zoology 118 (Survey of Physiology) or 208 (Human Physiology).

Students enrolled in other institutions should compare the catalog descriptions of the above courses to assure equivalency of content.

Course requirements for the third and fourth years are outlined in the professional bulletin of the School of Medicine.

Comparison of Curricula in Occupational and Physical Therapy

The educational programs in Occupational Therapy and in Physical Therapy share a common need for studies in human anatomy and physiology with a special emphasis on the musculoskeletal and nervous systems and a need for basic studies in pathological physiology and medical sciences. In these areas of study, the two curricula share identical courses. In other areas, the two curricula are independent programs, with separate faculties for instruction in the professional courses and separate Advisory and Evaluation Committees.

The application procedures, student promotion policies, and fees apply to both curricula except where exceptions are specifically noted.

Admission to the Physical Therapy and Occupational Therapy Curricula

For entrance to the professional curricula, the applicant must initiate the following steps on or before February 1: (1) Arrange a personal interview with a member of the teaching staff of the division concerned; this may be waived under certain conditions. (2) Submit formal application to the Advisory and Evaluation Committee of the division concerned, University of Washington

Department of Rehabilitation Medicine, CC814 University Hospital, Seattle, Washington 98195. Application forms are available from the Department. (3) Arrange for official transcript(s) to be sent directly from the registrar(s) of previous college(s) to the Advisory and Evaluation Committee, including complete record with grades and credits to date. When college transcripts do not include a complete list of high school courses and credits, such a list must be submitted with the application. Also include a list of courses the applicant is currently taking or will take to complete pre-professional requirements. An official record of grades for such courses must be submitted when available. (4) An unmounted recent photograph, 2x2 inches, is desirable but not required.

The Advisory and Evaluation Committee bases its decision on the objective evaluation of the applicant's residence, preprofessional training, evidences of scholarship, and evidences of personal qualification for the work. The Committee or any one of its members may request a personal interview with the applicant to supplement the above information.

The Committee gives written notice to the applicant as soon as possible after a decision is made.

Student Achievement and Promotion

A student must maintain a satisfactory academic standing to be graduated. A University of Washington cumulative grade-point average of 2.50 is currently required.

At the end of each academic year the Advisory and Evaluation Committees evaluate the accomplishment of the student during the year and determine his fitness for promotion. When promotion is not recommended, the student is subject to dismissal from the curriculum. The Advisory and Evaluation Committees reserve the right to dismiss a student from the curriculum for any reason deemed sufficient. A student is advanced only when his general attitude, scholastic progress, and personal attributes are considered satisfactory.

Prosthetics and Orthotics

Undergraduate Program Adviser
Bernard C. Simons

The Prosthetics and Orthotics program leads to the degree of Bachelor of Science.

The prosthetist-orthotist is part of a professional medical team devoted to the evaluation and treatment of the physically handicapped. He is responsible for the design and fabrication of prosthetic and orthotic devices (artificial limbs and braces) and for helping handi-



capped patients of all ages to enjoy more functional and independent lives.

Admission

Students are admitted to this curriculum at the junior level and, among other qualifications, must ordinarily have completed the specific requirements or their equivalent with a minimum cumulative grade-point average of 2.50. Exceptional cases will be considered when applications are supported by adequate evidence of qualifications.

Program Requirements

The last two years of the curriculum must be taken at the University of Washington School of Medicine. Entrance to this part of the program is dependent on the decision of the Prosthetics and Orthotics Laboratory Advisory Committee.

Proficiency requirements for the program are completion of the freshman English requirement; and Mathematics 101 or equivalent by test score, trigonometry in high school or college.

For a listing of required courses, see the professional bulletin of the School of Medicine.

Advising

Students who are interested in pursuing this program should contact the Director of Prosthetics and Orthotics, BB12 University Hospital, Seattle, Washington 98195.

Graduate Programs in Rehabilitation Medicine

Graduate Program Adviser

Justus F. Lehmann

CC814 University Hospital

The graduate programs in Rehabilitation Medicine lead to the degrees of Master of Science and Master of Occupational Therapy. Applicants for admission to the Master of Science degree program must be enrolled in or have completed residency training in the specialty of physical medicine and rehabilitation. Applicants for admission to the Master of Occupational Therapy degree program must be registered occupational therapists or have a college degree in a related field. One year of working experience is desirable. In addition, all applicants must meet the requirements of the Graduate School.

Master of Science

It is anticipated that graduate students working toward the Master of Science degree will take some of the course work during the three-year residency and devote an additional one to two years to the master's program. Opportunity will be given to students who have already

completed their residencies to combine the course work and research in a two- to three-year program.

Master of Occupational Therapy

The graduate program is designed for the registered occupational therapist to prepare him as an academic or clinical educator, administrator-supervisor, or researcher in the field of occupational therapy. Departmental requirements include the established core courses and an approved thesis. Remaining credits may be earned through appropriate elective courses directed to the student's area of interest. Opportunities for supervised teaching, as well as administrative practice, will be incorporated in coursework. Based on an applicant's needs and prior preparation, the program can be planned to cover a span of one to two academic years.

A prospective candidate must be a registered occupational therapist and have graduated from an accredited institution. A minimum of one year's experience is desirable, but will not be required if the student is otherwise acceptable.

SURGERY

Chairman

K. Alvin Merendino

BB479 University Hospital

Professors

James R. Cantrell, David H. Dillard, T. Lloyd Fletcher, Thomas L. Marchioro, K. Alvin Merendino, John K. Stevenson, D. Eugene Strandness, Jr.

Associate Professors

Edwin C. Brockenbrough, Eugene A. Hessel II, Roger E. Moe, Hitoshi Mohri, Loren C. Winterscheid

Assistant Professor

Hubert M. Radke, Wesley W. Sikkema, David S. Sumner

Instructors

Robert W. Barnes, Dean F. Obenchain, William G. Yates

Research Instructors

Hsi-Lung Pan

In the Department of Surgery, instruction is carried on during all four years of the medical student's training and is integrated with that of the other departments in the School of Medicine.

The purpose of the undergraduate instruction in surgery is to provide the student with a basic background of surgical principles and surgical diagnosis and a knowledge of surgical problems.

In addition to the basic undergraduate instruction, a fully certified surgical residency program is available in general and thoracic surgery.

Graduate Program

Graduate Program Adviser

David H. Dillard

BB447 University Hospital

The faculty in the Department of Surgery offer a program in the Graduate School leading to the degree of Master of Science.

Students participating in residency programs may apply for admission to the Graduate School to work toward a degree of Master of Science by meeting the requirements of the Graduate School as outlined in the *Graduate Study* section of this catalog. Performance of fundamental experimental research of high caliber is an additional requirement for this advanced degree.

More complete information concerning the Department of Surgery's programs is provided in the professional bulletin of the School of Medicine.

UROLOGY

Chairman

Julian S. Ansell

D416 Health Sciences Building

Professor

Julian S. Ansell

Associate Professors

Glover W. Barnes, Warren H. Chapman, J. William McRoberts

Instructors

Mark D. Kiviat, James A. Tremann

Urology is the surgical discipline concerned with diseases of the male genitourinary organs and the female urinary tract. Training for medical students starts in the second year and continues through the third and fourth years.

Training is also provided for interns, nurses, and physical medicine technologists and allied specialists.

An approved urology residency program is available.



NURSING

Dean

Madeleine M. Leininger
C309 Health Sciences Building

Associate Deans

Doris Geitgey, Katherine J. Hoffman

Assistant Deans

Elizabeth Byerly, Dorothy Crowley, Florence Gray

Professors

Marjorie Batey, Richard M. Emerson, Elizabeth Giblin, Katherine J. Hoffman, Kathleen M. Leahy (emeritus), Madeleine Leininger, Dolores Little, Louise Mansfield, Mary S. Tschudin (emeritus)

Associate Professors

Jeanne G. Benoliel, Roma P. Blaschke, Edna M. Brandt, A. Evelyn Burke (emeritus), Doris Carnevali, Marguerite Cobb, Dorothy M. Crowley, Mildred Disbrow, Doris Geitgey, Florence I. Gray, Stella Hay, M. Edith Heinemann, Edith A. Metz, Helen Nakagawa, Virginia Olcott (emeritus), Oliver Osborne, Rosemary Pittman, Patricia Rose, Harriet Smith (emeritus), Margaret Spaulding, Jacqueline Vandeman

Assistant Professors

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Joleen Heath, Dorothy Hicks, Mary Jones, Margaret Linn Larson, Patricia MacElveen, Pam Mitchell, Sally M. O'Neil, Betty Pesznecker, Marcene Powell, Ella-grace Reekie, M. Jean Saxon, Benita Sharp, Muriel Standeven, Margo Stephens, Barbara Walike, Alma Ware, Barbara Williams, Vivian Wolf, Elizabeth Worthy

Instructors

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Nursing has a unique role in assisting individuals, family units, and community groups to resolve health problems in the physical, emotional, and social environments. Individuals in our society are in continuous in-

teraction with the changing environment as they strive to meet their basic human needs. Pressures from that interaction have an impact on the physical, emotional, social, cultural, and economic well-being of the individual, family, and community. Persons and social units vary in their ability to deal effectively with stress and its results. Nursing encompasses the promotion of health; the conservation of health; and the care, treatment, and rehabilitation of the physically and emotionally ill of all ages, in health centers, home, and community.

The University of Washington School of Nursing aims to prepare nurses who with experience and continued learning are expected to become increasingly proficient in meeting the nursing needs of people. The nurse collaborates with the physician as well as members of other disciplines in the achievement of therapeutic goals through devising and carrying out nursing care plans. Nurses use creative thinking in recognizing need for change, initiating change, and exercising judgment based on a sound foundation of scientific principles in relation to varying circumstances and technological advances. The professional nurse assumes the responsibility for directing those with less preparation to maintain the quality of patient care.

The School of Nursing offers undergraduate and graduate programs within the framework of the overall philosophy of the University of Washington. The faculty assumes the responsibility for the quality of its educational programs and for promoting effective nursing for the public through teaching, research, and service. The programs are designed to prepare professional nursing practitioners and to aid in the development of those who will serve in leadership roles in the transmission and advancement of nursing knowledge. The curriculums permit the student to develop increasing responsibility for personal learning; for developing a scientific attitude that promotes the critical investigation of ideas, independence of thought, and objectivity of observation; and for increasing the student's skill in organizing and synthesizing knowledge from many fields. The student brings this knowledge to bear upon the solution of typical nursing care problems of patients, families, and the community in meeting health needs.

The qualified student brings to the professional school a background from which she begins to make her individual contribution to nursing. The educational program promotes her professional and personal development. Opportunity for increasing self-direction in learning and in the management of her own life is essential. Breadth of academic background in the humanities and

in the natural and social sciences contributes to fulfillment of professional responsibilities and personal interests. The School of Nursing is committed to development of wider opportunities for minority and disadvantaged students in both the school and the nursing profession.

General education and professional preparation compose the undergraduate curriculum leading to the degree of Bachelor of Science in Nursing. They are designed to provide the basis for continuing personal and professional growth in the practice of nursing throughout the student's life. Successful completion of the program with the appropriate level of academic achievement enables the student to move directly into graduate study. The registered nurse who is a graduate of either a diploma or associate degree program follows the registered-nurse baccalaureate curricular pattern and the high school graduate follows the basic pattern in the undergraduate curriculum. The baccalaureate program includes approved preparation for community health nursing. Supplementary work in community health nursing preparation is also offered.

The School also offers programs leading to the degrees of Master of Arts and Master of Nursing. Students matriculated in another discipline for study toward a doctoral degree may elect a minor in nursing. Post-master's programs in advanced clinical study, planned on an individual basis, also are available.

Majors in nursing are held responsible for knowing and adhering to the rules and regulations of the University of Washington and the School of Nursing. Because the School has a responsibility to the public and to the profession of nursing, it must require of its graduates not only adequate knowledge of nursing theory and practice, but also the qualifications which are important to a professional nurse. Maintenance of good relationships with patients and co-workers, good physical and mental health, and a sincere interest in people are important for a successful nursing career.

The School of Nursing reserves the privilege of retaining only those students who, in the judgment of the faculty, satisfy the requirements of scholarship, health, and personal suitability to practice nursing.

Nursing education at the University began in 1917, under the leadership of Mrs. Elizabeth S. Soule, with a pre-nursing program consisting of a few public health nursing courses for graduates of hospital schools of nursing. These offerings were extended until both undergraduate and graduate programs were developed. In 1931, the integrated baccalaureate program was initiated in the Department of Nursing Education in the



College of Arts and Sciences, and in 1945 the School of Nursing became an independently organized professional school in the Division of Health Sciences. In the spring of 1971 a new organizational plan was implemented that led to official departmentalization with the establishment of five departments: Comparative Nursing Care Systems, Family and Community Nursing, Maternal and Child Nursing, Physiological Nursing, and Psychosocial Nursing.

All programs are fully approved by the National League for Nursing.

THE GRADUATE PROGRAM

The graduate program in the School of Nursing is consistent with the philosophy of the Graduate School of the University of Washington. It is assumed that the student enters with basic knowledge and nursing ability as a professional practitioner and that the student's undergraduate education has provided a foundation in the liberal arts. Graduate offerings provide opportunity for the student to increase clinical skills and develop teaching and research skills.

The faculty recognizes that each student comes with individual goals, and that the attainment of these goals will be achieved in various ways. Graduate study is characterized particularly by the student's involvement in independent study and research. Research followed by the sharing of results for critical review of one's colleagues is a component of all graduate programs. The results of independent study for the master's degree are set forth in a thesis.

The faculty believes there are theories and concepts that underlie all nursing and have relevance for all students, regardless of the field of special interest, and that there are some theories and concepts that may be more applicable to specialty areas. The use of theories from other fields, their reconceptualization for nursing, and the identification of theories peculiar to nursing are germane to graduate study. It is believed that there is a scientific rationale underlying the nursing process.

As part of a graduate program, each student will have an opportunity to test nursing theory, to observe and to analyze phenomena in the patient-care situation in a specific clinical area, to identify researchable problems, and to specialize in one area of knowledge. The curriculum includes theory basic to teaching administration and supervision, and clinical specialization in nursing. Opportunity for the application of these theories will be provided throughout the clinical field experience. The student thus is given a base for continuing the refinement of these competencies after graduation.

School Facilities and Services

The School of Nursing is part of the Health Sciences Center that is composed of the Schools of Dentistry, Medicine, Nursing, Public Health and Community Medicine, Social Work, and the College of Pharmacy. The Health Sciences Building, located at the south end of the campus near the Portage Bay Yacht Basin, houses the administrative units of the Schools of Dentistry, Medicine, Nursing, Public Health and Community Medicine, a variety of classrooms, research and laboratory facilities, a library, and an auditorium. The University Hospital, adjacent to the Health Sciences Building, was opened in May 1959. It provides extensive inpatient and outpatient departments and is an excellent teaching and research facility for students in nursing and other health sciences fields.

In conducting the undergraduate and graduate clinical teaching programs, the School of Nursing utilizes the facilities of the University Hospital with a bed capacity of 324; Harborview Medical Center, with a bed capacity of 253; Swedish Hospital Medical Center, with a bed capacity of 461; Virginia Mason Hospital, with a bed capacity of 292; The Doctors Hospital, with a bed capacity of 183; the United States Veterans Administration Hospital, with a bed capacity of 302; and St. Frances Xavier Cabrini Hospital, with a bed capacity of 225. Hospitals offering health care for selected individuals or specific illnesses include the Children's Orthopedic Hospital and Medical Center, with a bed capacity of 200; Firland Sanatorium, with a bed capacity of 128; Western State Hospital, with a bed capacity of 1800; and Seattle Treatment Center, with a bed capacity of 65. Experience in community health nursing is arranged through the public health departments of Seattle-King County and Snohomish County. Other community facilities are used, as necessary, to provide selected learning experiences for students.

Nursing Students' Organizations

All students registered in the basic program of the School of Nursing are eligible for membership in the Associated Nursing Students organization. By belonging to ANS, students are eligible to belong to SWANS (State of Washington Association of Nursing Students), which is made up of students from all the schools of nursing in the state. As a member of SWANS, a student is automatically a member of the National Student Nurse Association.

Among the functions of ANS are those that provide for unity and fellowship among classes, the promotion of interest in nursing, and the promotion of the interests and welfare of the nursing student.

The University of Washington Nursing Students Association was organized in the autumn of 1970. It provides opportunities for students in all programs to participate in the affairs of the School of Nursing.

Students may qualify for membership in Sigma Theta Tau, the national honorary society in nursing, by maintaining a cumulative grade-point average of 3.30 and evidence of leadership qualities.

Alpha Tau Delta, a national honor society for college women in nursing, has a chapter at the University of Washington. Students are eligible for membership upon completion of the first year of the basic program or current enrollment as a registered nurse in the baccalaureate program and a cumulative grade-point average of 2.75 or better.

Admission

Freshman Admission

To prepare for normal progress in the School of Nursing, the student requesting admission as a freshman is expected to meet the scholastic criteria that all students meet for entrance to the University. In addition, students are advised to select chemistry as their first laboratory science. A course in physics and a third year of mathematics are strongly recommended, and a fourth unit in English will be found helpful.

Progression to the Clinical Program

Clinical facilities in the anatomy-physiology laboratories are limited, necessitating an enrollment quota that will apply for the second year (sophomore) of the program. Admission into the second year, either by progression of freshman students currently enrolled or by students wishing to transfer from other institutions, is selective and limited in number. The enrollment quota for the second year will be filled with preference given to those applicants judged by the School to be best qualified to undertake the program. Equal consideration will be given to applications from students already enrolled in the School or seeking transfer to it from elsewhere on the University campus or from another institution. Prospective nursing transfers should write to the Undergraduate Advisory Office of the School of Nursing before the end of the Autumn Quarter prior to the year they wish to enter the second year of the Nursing program. Selection of the class for the second year will be made prior to the beginning of the Summer Quarter preceding the Autumn Quarter of the second year. Selection of students for the second year will be based on: (1) the applicant's scholastic standing in high school and college; (2) available test scores; (3) evidence that 45 credits and (4) the prerequisite courses (including organic and inorganic chemistry) will be completed

before entrance into the Autumn Quarter of the second year.

Admission With Advanced Standing

Available clinical facilities place certain limitations on the number of transfer students who may be accepted into the third and fourth years of the nursing program. Not all students who apply and meet minimum standards of the University can be placed in the School of Nursing. Students will be selected to the extent that facilities are available and according to the qualifications they present.

Applicants who are registered nurses must be graduates of an approved community college or hospital school of nursing whose curriculum included psychiatric nursing.

Registered nurse applicants for admission to advanced undergraduate standing should request their school of nursing to send two copies of their record to the University of Washington Office of Admissions as part of the admission procedure. The planned sequence of nursing courses begins Autumn and Spring Quarters.

Fifth-year Students

Students holding a baccalaureate degree in nursing with a deficiency in basic community health nursing and/or psychiatric nursing may be admitted with a fifth-year status. Individuals seeking preparation for the Continuing Provisional Certificate in School Nursing also apply for fifth-year status. A student admitted to the fifth-year status is not in Graduate School.

Admission to Graduate Standing

Admission to the graduate programs of the School of Nursing requires acceptance by the Graduate School as well as admission to the School of Nursing. (See *Graduate Study* section of this catalog.) Applicants must be graduates of a baccalaureate program with an upper-division major in nursing, not necessarily accredited by National League for Nursing, but comparable to that of the University of Washington. Professional experience is not required prior to admission to the graduate program. Graduate Record Examination (Aptitude Test) and successful completion of a basic course in statistics are required prior to admission.

Extra Fees and Expenses

In addition to usual tuition and fees, students should be prepared to pay the cost of transportation between the University campus and the teaching units. This amount will vary from quarter to quarter. Basic degree students should plan approximately \$60.00 for the purchase of uniforms in the sophomore year and approximately \$2.00 for special achievement tests throughout the program. Graduate students who are matriculated for advanced degree programs should plan to have avail-



able approximately \$150 for costs connected with the preparation of their master's thesis.

Beginning in the sophomore year, all Nursing students are required to provide their own transportation for their clinical experiences. Selected field instruction during the senior year may be in one of several agencies, either in or outside of Seattle. The student must be prepared to have a car for use, must have a current driver's license, and must meet state requirements for insurance protection for such experiences.

Licensure

Nurses who are graduates of approved nursing programs may be admitted to the School of Nursing prior to completion of the State Board Examination, but continuation in either the undergraduate or graduate program requires that students be currently licensed to practice nursing in some state or country. Nurses who expect to be employed in nursing while attending the University must be licensed to practice in the state of Washington and may apply to the State Board of Professional Nurse Registration, Department of Licenses, Olympia, Washington.

Health Care

All students in the School of Nursing are required to take a special health examination, chest X rays, and inoculation for smallpox, tetanus, poliomyelitis, and diphtheria before beginning clinical laboratory courses. Physical defects must be corrected at the student's own expense. Students are expected to assume initiative in following the health program. Basic undergraduate students should see details of health care requirements listed in the *Handbook for Nursing Students*, available from the University Book Store.

Financial Assistance

A number of scholarships, awards, and loans are available to qualified entering or currently enrolled students and are administered by the University of Washington Office of Student Financial Aids, 170 Schmitz Hall, 1400 NE Campus Parkway, Seattle, Washington 98195. Information concerning financial assistance can be obtained by contacting this office. Information is also available in the undergraduate advisory office of the School of Nursing. All students are encouraged to investigate resources in their communities for possible scholarships or other financial aids.

Undergraduate Scholarships, Awards, and Loans for Nursing Students

Currently enrolled students are expected to anticipate their financial needs and apply to the Office of Student Financial Aids within the published dates. This is usually in February preceding the next academic year.

In an emergency, however, students with a satisfactory grade-point average may make a request for assistance directly to the Scholarship, Award, and Loan Committee through the undergraduate advisory office of the School of Nursing.

General University scholarships are awarded on a competitive basis according to (1) scholarship achievement above the 3.00 (B) grade-point average, (2) financial need, and (3) participation in the extracurricular activities of the campus and community. Students who are preparing to enter the field of community health nursing may apply, upon recommendation of their program adviser, for a Goldsbury Memorial Scholarship.

The Swedish Hospital Medical Center Award is given by the Board of Directors to the outstanding basic student at the end of the junior year. Candidates are selected on the basis of scholarship and contribution to the community, the University, and the School of Nursing.

Application for federally funded grants, loans, and scholarships may be made through the Nursing Scholarship Program in the Office of Student Financial Aids. Qualified registered nurse students may apply for federal grants and traineeships for the final four quarters of the curriculum. Basic and registered nurse students who anticipate continuing with graduate study in psychiatric nursing, and who meet requirements, may be considered for the National Institute of Mental Health Traineeship during the junior and senior years of the nursing program. Application for federal grants and traineeships may be made to the Dean of the School of Nursing, and information may be obtained through faculty advisers.

Educational Programs Offered by the Military Services

The Army Student Nurse Program provides two years of educational opportunity on enlisted reserve status during the junior and senior years of the curriculum. Six months prior to graduation those under this program are commissioned as second lieutenants of the Army Nurse Corps. Upon completion of the basic nursing program and licensure as a registered nurse, participants serve on active duty for either two or three years, the duration determined by time spent in the student nurse program.

The Navy Nurse Corps Candidate Program offers a similar opportunity for qualified students during the junior and senior years. Upon graduation and licensure as registered nurses, appointees under this program will be obligated to accept appointment as ensigns in the Nurse Corps of the Naval Reserve and to serve on active duty for a period determined by the time spent in the student nurse program.

Undergraduate registered nurse students in the baccalaureate program may apply for appointment in the Army or Navy student nurse programs discussed above.

Students in the baccalaureate programs may also apply to the Officer Student Training and Extern Program offered by the U.S. Department of Health, Education, and Welfare.

Postbaccalaureate and Graduate Traineeships, Assistantships, and Fellowships

The University of Washington participates in the Professional Nurse Traineeship Program as administered by the Division of Nursing, Bureau of Health Professions Education and Manpower Training, National Institutes of Health. This program offers a limited number of traineeships for qualified applicants who are preparing for administration, teaching, supervision, or clinical specialization in nursing, including community health nursing. Under the program of the National Institute of Mental Health a limited number of traineeships are available for nurses eligible for advanced study in psychiatric nursing, and for psychiatric nurses who are seeking doctoral level study in other disciplines.

Graduate students are eligible to apply to the Office of Student Financial Aids for the Nursing Student Loan and Scholarship Program under the Public Health Service Act as amended, Title VIII, Nurse Training, DHEW.

Under a grant from the Public Health Service, traineeships are available for a limited number of students enrolled in the Nurse-Scientist Graduate Program leading to the Doctor of Philosophy degree.

A limited number of traineeships for post-master's study in mental retardation are available under a program supported by the Children's Bureau, Department of Health, Education, and Welfare.

Applications for the above traineeships should be made to the Dean of the School of Nursing. Information may be obtained through faculty advisers.

The Graduate School provides for the employment of teaching and research assistants. (See *Graduate Study* section.) Foreign students on an educational visa are eligible to apply for such assistantships. Requests for assistantship application forms should be sent to the Graduate Program Adviser, School of Nursing.

Predoctoral students with a major in another discipline and a minor in nursing may be eligible for financial assistance through one of the following fellowship programs. Applications should be made directly to the agency administering the fellowship. *The United States Public Health Service Fellowship*: Chief, Research

Grants Branch, Division of Nursing, Bureau of Health Professions Education and Manpower Training, National Institutes of Health, Building 31, 9000 Rockville Pike, Bethesda, Maryland 20014. *The Nurses Educational Fund Incorporated*: 10 Columbus Circle, New York, N.Y. 10019. *The American Nurses Foundation*: 10 Columbus Circle, New York, N.Y. 10019.

Army Nurse Corps Candidate Program

A graduate student in nursing participating in this program is commissioned in the Army Nurse Corps, U.S. Army Reserve, as second or first lieutenant. Under this program the nurse agrees to remain as a commissioned officer with the Army Nurse Corps for either two or three years, excluding time spent in school.

Navy Nurse Corps Candidate Program

Graduate students who are accepted incur the same service obligations as do undergraduate candidates. Upon completion, they are commissioned as ensigns, lieutenants junior grade, or lieutenants, depending upon their professional nursing experience.

Nursing Education Award

The Nursing Education Award is granted annually to the outstanding graduate of each of the programs of the School of Nursing. Candidates are selected on the basis of their scholarship, their contribution to the community, the University, and the School of Nursing, and their potential contribution to the profession of nursing.

UNDERGRADUATE PROGRAMS

Assistant Dean and Director of Undergraduate Programs

Florence Gray

D325 Health Sciences Building

Advisers

Doris Carnevali, Stella Hay, Pam Mitchell

D325 Health Sciences Building

Bachelor of Science in Nursing

The curriculum leading to the Bachelor of Science in Nursing degree is designed for two types of students; one is the student with no previous preparation in nursing; the other, the student who is a graduate of a hospital or community college school of nursing. For the student with no previous preparation in nursing the curriculum is planned for four academic years and one summer session at the end of the sophomore year. For the student who is a registered nurse, the length of the program will vary depending on her previous education and the course load carried while at the University. There is a close interrelationship between the general and professional aspects of the program. The distribu-



tion of required courses provides a balance between general and professional education. An academic adviser will assist the student in the selection of the appropriate courses and will make suggestions for electives in the humanities and social sciences which will contribute to the individual's intellectual and personal development. Students interested in taking advantage of courses through Satisfactory/Not Satisfactory or Credit/No Credit options are encouraged to discuss the feasibility of such an option with their adviser.

Mathematics Proficiency

Because an elementary proficiency in mathematics or logic is becoming more and more necessary in the study of the natural and social sciences that make up a large portion of the nursing curriculum, and because it is an expected accomplishment of the educated person, each student who enters the School of Nursing as a freshman or as a beginning or transfer student in the registered nurse program is expected to meet a proficiency requirement in mathematics or logic. This requirement may be satisfied by one of the following:

(1) Presenting a score of 55 or better in the mathematics achievement test included in the Washington Pre-College Testing Program, or by presenting grades of B or better in each of three years of college preparatory mathematics in high school

(2) Completing Mathematics 101, Intermediate Algebra (This course is offered by the University as a noncredit course through the Division of Independent Study only.)

(3) Completing Philosophy 120, Introduction to Logic

Clinical Instruction

Clinical instruction is provided in all of the major fields of nursing: medical-surgical, maternal-child health, psychiatric mental-health, and community health nursing. This instruction is carried on in a variety of hospitals and other community facilities.

Community health nursing field instruction and psychiatric nursing field instruction may, during the senior year, be in one of several agencies either in or outside of Seattle. The student must be prepared to have a car for use during the field instruction quarters, have a current driver's license, and meet state requirements for insurance protection.

Distribution of required courses:

Area	Credits
Nursing	88
Related Medical Sciences	9
Physical and Biological Sciences	32

Humanities	24
Social Sciences	14
Electives (Humanities/Social Sciences)	13
Total	180

Students With No Previous Preparation in Nursing

Study in the arts and sciences is distributed over the first three years. Professional nursing study is dispersed throughout the curriculum, but greater concentration is provided during the junior and senior years.

Graduates of the program are prepared to enter nursing practice in all clinical fields of nursing. They are eligible to take the state licensing examination to become registered nurses.

Requirements are:

Area	Credits
Nursing (227, 228, 229, 260, 298, 299, 301, 367, 368, 369, 370, 371, 372, 373, 374, 409, 412, 413, 414, 415, 416, 421, 422, 429)	88
Related Medical Sciences (Health Services 323, Epidemiology and International Health 410, and Pharmacy 352)	9
Physical and Biological Sciences (Chemistry 101, 102, Microbiology 301, Conjoint 316, 317-318)	27
Humanities (5 credits of freshman English are required)	24
Social Sciences (Psychology 100, Sociology 110, Home Economics 319)	14
Electives in Humanities/Social Sciences (May include 5 credits of natural sciences)	18
Total	180

CURRICULUM

First Year

AUTUMN QUARTER	CREDITS
CHEM 101 General	5
ENGL (Freshman)	5
Humanities elective	5
	15

WINTER QUARTER	CREDITS
CHEM 102 General and Organic	5
Humanities or Social Sciences electives	10
	15

SPRING QUARTER	CREDITS
Social Sciences elective	5
Humanities elective	5
PSYCH 100 General Psychology	5
	15

Sociology 110 or Psychology 100 may be taken in either the freshman or sophomore year. Physical Education 205 (Basic Biomechanics for Nursing), 2 credits, is recommended during the first year.

Courses in the freshman year may be taken in any accredited college, or university. The remainder of the program is to be completed at the University of Washington. Students who wish to transfer to this School from another university school of nursing may be admitted to the basic professional program if they qualify for admission to the University and there are facilities available in the class they wish to enter. (See Admission With Advanced Standing.)

Registered Nurse Pattern

The registered nurse pattern differs in sequence and learning experiences from the basic pattern for students with no preparation in nursing, but is designed to attain the same goals.

Students with less than 45 transfer credits who have not taken the Washington Pre-College Test and who are younger than twenty-three years of age must take the test before their first registration. The 45 transfer credits are exclusive of physical education and military training. Students entering without acceptable transfer credits in freshman English must take the English section and all students must take the mathematics section of the Washington Pre-College Test.

A registered nurse student may be allowed a limited number of credits in nursing on the basis of the results of a Comprehensive Nursing Placement Examination on selected nursing courses administered at the University of Washington. An appointment to take these examinations may be requested of the Bureau of Testing at the University, at any time, but must be completed at least five working days prior to registration. Credits earned in biological and physical sciences and family nutrition ten years prior to entering the program are not acceptable.

The registered nurse pattern of approach to the baccalaureate degree varies from that listed for the basic pattern in the requirement for Social Work 401, a 2-credit course, and in the required nursing courses at the 300 level that build on the competencies the student brings to the program. These are Nursing 351, 353, 354, 356, and 358. Nursing courses taken with the students in the basic pattern are as follows: Nursing 298, 299, 301, 412, 415, 416, 421, 422, and 429. Otherwise, the requirements listed for the areas of Related Medical Sciences, Humanities, Social Sciences, and Elective in Humanities or Social Sciences are essentially the same.

Registered nurse students are urged to carry professional liability insurance.

Other Programs

Supplementary Community Health Nursing Program

Supplementary study to prepare the registered nurse holding a baccalaureate in nursing or higher degree for community health nursing is available. The program extends over two quarters and includes a minimum of 20 credits in required and elective courses. At least half the course credits must be in nursing. The program must include community health nursing field practice. Satisfactory completion of the program will be noted on the student's transcript.

School Nurse Certification

Supplementary study to prepare the registered nurse holding a baccalaureate degree in nursing that includes an accredited component in community health nursing for school nurse certification is jointly planned and administered by the College of Education and the School of Nursing. The College of Education and the School of Nursing review credentials and make recommendations for either provisional or standard certification: the College of Education on completion of the professional education requirements, the School of Nursing on completion of the nursing requirements.

Affiliate Program

Community health nursing theory and field courses and upper-division psychiatric nursing theory and field courses are open to students enrolled in certain university schools of nursing.

Affiliating students enroll in the University and the School of Nursing for the quarter that they are taking the designated courses. They are required to meet the admission requirements prescribed by the University and must pay the usual tuition and fees. University credit is granted upon successful completion of the courses.

GRADUATE PROGRAMS

Associate Dean and Director of Graduate Programs
Katherine J. Hoffman

Graduate Program Adviser

Edith A. Metz
D311 Health Sciences Building

The School of Nursing offers graduate curriculums leading to degrees of Master of Arts and Master of Nursing. Post-master's programs planned on an individual basis are also available, including a doctoral minor for students matriculated in another discipline.



Master's Programs

Majors are offered in these nursing areas: comparative nursing care systems, that include cross-cultural nursing practices, and administration of nursing services; maternal-child; medical-surgical; psychiatric-mental health; and community health. The major area includes advanced clinical study with opportunity for functional preparation in teaching, supervision, administration, or clinical specialization.

Most programs are four quarters in length, but the individual program may vary with the particular major field and the number of credits carried each quarter. At least half of the total credits taken must be at the 500 level or above. Each student in the master's degree program carries out independent study in nursing and presents a written thesis. Within the first quarter of graduate study, the student should, with the help of her major adviser, plan her entire program in order to ensure a satisfactory sequence of courses.

Master of Nursing: Emphasis is on advanced preparation in an area of specialization in nursing. Supporting courses from at least two fields outside of nursing are required. A foreign language is not required for this degree.

<i>Area of Study</i>	<i>Credits</i>
Major: advanced nursing courses	19
Related Fields: courses in at least two other disciplines	12
Research: courses in research and thesis	14
	—
	45

Master of Arts: This program includes a major in nursing and a minor in another discipline. Students are encouraged to select a minor that will serve as a basis for further post-master study. Students are expected to meet the undergraduate prerequisites of the minor department. The required course work and exact number of credits for the minor are determined by the minor department. A student seeking this degree must demonstrate a reading knowledge of one foreign language.

Area of Study

Major: advanced nursing courses	19
Minor: courses in another discipline	(min.) 12
Research: courses in research and thesis	14
	—
	(min.) 45

Post-Master's Programs

Students who hold the master's degree may enroll for an additional period of study at the post-master level for the purpose of gaining additional depth in an area of study, added breadth of preparation, and increased knowledge and skill in nursing research. Post-master study is offered in the areas of maternal-child nursing, medical-surgical nursing, mental retardation, administration of schools of nursing, rehabilitation nursing, faculty preparation for associate degree nursing programs, and research in nursing. Individual programs of study may be planned in keeping with the student's scholarly interests and long-range professional goals.

Interdisciplinary Graduate Programs

The professional nurse who wishes to extend her formal study and to increase her scholarly and research competence may apply for admission to the predoctoral program in other disciplines. Suggested fields are business administration, education, genetics, history, or any other of the sciences basic to nursing. Individual special research fellowships are available in limited numbers.

Under a grant from the Public Health Service, the University of Washington offers a graduate program that is designed for the preparation of the nurse-scientist and leads to the Doctor of Philosophy degree. The student in this program may elect to major in one of several fields: anthropology, microbiology, physiology, or sociology. The minor field is nursing.

The School of Nursing offers a minor on the doctoral level for those students who are matriculated in other disciplines. The minor in nursing should total 35 graduate credits, of which at least half must be at the 500 level. The recommended sequence of courses for each student is determined in the light of her previous work and future goals.



PHARMACY

Dean

Jack E. Orr
102 Bagley Hall

Associate Dean

Louis Fischer

Professors

Lynn R. Brady, Louis Fischer, Forest J. Goodrich (emeritus), Nathan A. Hall, E. Roy Hammarlund, Alain C. Huitric, Edward Krupski, Walter C. McCarthy, Jack E. Orr, Elmer M. Plein, L. Wait Rising, Donald L. Sorby

Associate Professors

Wendel L. Nelson, William F. Trager

Assistant Professors

Gary W. Elmer, René H. Levy, Ronald D. Schoenwald, Larry A. Spitznagle, Frank F. Vincenzi

Instructors

Marianne F. Ivey, Wayne A. Kradjan, Gary H. Smith

Lecturer

Joy B. Plein

Research Associate Professor

Robert G. Benedict

Men and women qualified for professional service in one or more of the fields of pharmaceutical practice are becoming increasingly needed in today's society.

The University of Washington College of Pharmacy provides an instructional program, based on a five-year curriculum, that includes studies in liberal arts, basic sciences, and pharmaceutical sciences, and the application of this knowledge to good patient care. In addition, the college aspires to cultivate a high regard for professional ethics and the concept of service.

An almost unlimited number of opportunities exist for pharmacists as members of the professional team providing health care to the public. Pharmacy graduates may be found in a variety of settings wherever pharmaceutical services are rendered. The majority of graduates engage in the community practice of pharmacy and many are owners or part-owners of pharmacies. Still others become pharmacists in hospital and clinic pharmacies; medical representatives of pharmaceutical manufacturers; production, control, or research pharmacists in the manufacture of medicinal and other pharmaceutical products; personnel in wholesale drug distribution; food and drug control chemists or inspectors for governmental health agencies; or pharmaceutical association executives.

The search for new knowledge to further the major goals of the health professions—the maintenance of public health and the relief of human ills—is carried on through advanced research. The graduate program is designed to prepare advanced students for research



or teaching careers in the specialized pharmaceutical sciences.

Founded in 1894, the University of Washington College of Pharmacy adopted the present five-year curriculum in 1957. Since 1925 the College has accepted prospective candidates for the degree of Doctor of Philosophy with specialization in pharmaceutical and medicinal chemistry, pharmacognosy, and pharmacy.

The College of Pharmacy is within the Division of Health Sciences, and is a member of the American Association of Colleges of Pharmacy. It is accredited by the American Council on Pharmaceutical Education.

College and Related Facilities

The College of Pharmacy is located in Bagley Hall which it shares with the Department of Chemistry. Among the College facilities in Bagley Hall are laboratories for pharmacy, prescription practice, manufacturing pharmacy, biopharmaceutics and pharmacokinetics, pharmaceutical and medicinal chemistry, bionucleonics, pharmacognosy and research, as well as a drug service department and a stockroom.

The University Hospital, Harborview Medical Center, and Children's Orthopedic Hospital and Medical Center serve as training facilities for undergraduate and graduate students in clinical pharmacy. Students are assigned to various clinical areas of these hospitals and outpatient clinics and relate complex drug therapy to disease state and treatment planning.

The University Hospital Pharmacy and the Hall Health Center Pharmacy (Student Health Services) serve as training facilities for the College. Senior students who so elect are assigned to these pharmacies where they gain practical experience in compounding and dispensing prescriptions under the direction of staff pharmacists. The University Hospital Pharmacy and eleven other hospital pharmacies in Seattle serve as laboratories for undergraduate and graduate programs in hospital pharmacy. The hospitals' chief pharmacists, each of whom holds the University rank of clinical instructor in pharmacy, direct the laboratory instruction.

The Drug Plant Gardens of the College occupy several acres of garden area. Situated in the garden are five greenhouses; three research laboratories; drug drying, milling, and extraction equipment; a darkroom, and a preparation room.

Several hundred species of pharmaceutically important plants are maintained in the gardens and greenhouses. One greenhouse is devoted to plants of tropical habitat; others are used for student instruction in methods of

drug plant culture and for research in plant-growth regulators and the biosynthesis of plant constituents. An extensive seed exchange program is conducted with medicinal plant gardens throughout the entire world.

The drug service facility manufactures specialized pharmaceutical preparations for the Schools of Medicine and of Dentistry, Hall Health Center (Student Health Services), the University Hospital, and other sections of the University. Much of the work done by this facility is in formulation and product development of drugs and dosage forms to be used in clinical and experimental research.

The College maintains a laboratory for the analysis of food products submitted by the Office of the Director of the State Department of Agriculture, drugs submitted by the State Pharmacy Board, and alcoholic products for the State Liquor Control Board. The Dean of the College is the State Chemist.

The American Pharmaceutical Association, established in 1852, maintains student chapters so that students in the various colleges of pharmacy may join the national organization. The campus branch meets monthly during the academic year and sponsors lectures, social functions, and field trips. All students in the College are eligible for membership.

Honorary and Fraternal Societies

Election to membership in *Rho Chi*, the pharmaceutical honor society, is on the basis of high scholarship and professional promise. *Rho* Chapter, at the University of Washington, one of 68 collegiate chapters, was established in 1932. Students who have completed 60 per cent of the credits required for graduation in pharmacy with a grade-point average of at least 3.00 are eligible for membership. The purpose of *Rho Chi* is to promote the scientific advancement of pharmacy and to encourage high academic attainments.

Kappa Psi is a national professional pharmaceutical fraternity dedicated to the promotion of industry, mutual fellowship, high ideals, and high scholarship among its members, and to fostering pharmaceutical research. The University of Washington chapter, *Beta Omicron*, is one of 58 collegiate chapters and sends delegates to the Grand Council, which meets biennially. The campus chapter meets twice a month in alternate business and social meetings.

Lambda Kappa Sigma, the oldest and largest pharmaceutical sorority in the world, promotes the profession of pharmacy among women. There are now 38 collegiate and 15 alumnae chapters. *Chi* Chapter, at the University of Washington, participates in many activi-

ties. New members are selected during the first professional year on the basis of character, scholarship, and personality.

Employment

A list of positions open in retail and hospital pharmacies is maintained by the College of Pharmacy.

UNDERGRADUATE PROGRAMS

Adviser

Louis Fischer
300 Bagley Hall

Bachelor of Science in Pharmacy

The pharmacy program is a five-year course of study that leads to a Bachelor of Science in Pharmacy degree. The final three years must be spent in residence in the College of Pharmacy. Students working toward the bachelor's degree in pharmacy must meet certain general requirements of the University and the following college requirements: completion of the prescribed college curriculum, with a minimum of 225 academic credits, and have a cumulative grade-point average of 2.00 (C) in the professional courses and an overall cumulative average of 2.00 (C). No more than 18 credits in advanced ROTC courses, no more than 3 credits in physical education activity courses numbered 100-199, and no more than 6 credits in professional courses numbered 499 may be applied toward graduation.

Licensure

In order to be admitted to the practice of pharmacy as a registered pharmacist in the state of Washington, the candidate must graduate from an accredited college of pharmacy, complete the internship requirements as prescribed, and pass the licensing examination.

After enrollment in the College of Pharmacy, the student should file with the State Board of Pharmacy an application for registration as a pharmacy intern (fee \$1.00). The Board requires 1,500 hours of internship experience of which 300 hours must be served after graduation. Credit may be allowed for up to 300 hours for the completion of clinically-oriented classes and an additional 500 hours for graduation from the college.

Further information about licensure requirements may be obtained from the State Board of Pharmacy, Washington Education Association Building, 319 7th Ave., Olympia, Washington 98501.

Curriculum

Biochemistry: 405
Biological Structure: 301

Biology: 210, 211, 212

Chemistry: 140, 150, 151, 160, 170, 231, 235, 236, 241, 242

English: 171, 172, and a third quarter of English or Speech

Mathematics: 104*, 105, 124 or 157

Microbiology: 301, 302

Pathology: 310

Pharmacognosy: 412, 413, 414

Pharmacology: 401, 402

Pharmaceutical Chemistry: 325, 400, 440, 441, 442, 497

Pharmacy: 328, 329, 330, 331, 332, 405, 407, 408, 450, 452, 484

Physics: 114, 115, 116, 117,** 118,** 119**

Physiology and Biophysics: 360

*Exempt if trigonometry was taken in high school. Offered only through Continuing Studies for no credit.

**Exempt if physics was taken in high school.

The curriculum is continually being revised as new courses are made available to meet the changing needs of the pharmacy profession. A copy of the latest revision may be obtained on request.

GRADUATE PROGRAMS

Graduate Program Adviser

Jack E. Orr
102 Bagley Hall

Admission

Students who intend to work toward a Master of Science or Doctor of Philosophy degree must apply for admission to the Graduate School and meet the requirements outlined in the *Graduate Study* section. Graduate students must satisfy the requirements for an advanced degree which are in force at the time the degree is to be awarded. Graduate study requires approval of both the College of Pharmacy and the Graduate School.

Students with undergraduate degrees in pharmacy or in the biological or physical sciences are accepted for graduate study in the pharmaceutical sciences. Students without undergraduate degrees in pharmacy will be required to complete courses basic to their chosen field of study during their graduate careers.

Undergraduates who plan to pursue graduate study may expedite their programs by selection of pertinent electives. Although the choice of electives will vary with the identity of the student's selected field in the pharmaceutical sciences it should be emphasized that graduate studies in the College of Pharmacy require adequate preparation in the physical and biological sciences, in mathematics, and in foreign language. Mathematics



through calculus and courses in physical chemistry, qualitative organic chemistry, and biochemistry should be taken prior to admission to graduate study. However, students who have not completed certain desired courses during their undergraduate work may be permitted to do so during their graduate programs.

Specialization is offered in pharmaceutical and medicinal chemistry, pharmacognosy, pharmacy, and hospital pharmacy. Graduate study toward an advanced degree in pharmacology is directed by the Department of Pharmacology of the School of Medicine. The hospital pharmacy program may include a hospital pharmacy residency if desired by the student.

Graduate programs of study vary with the specialization selected. Although the programs are flexible, certain general recommendations may be made. In addition to studies in their chosen field, students with specializations in pharmaceutical chemistry and pharmacy are required to follow programs of course work usually selected from advanced courses in organic chemistry, physical chemistry, biochemistry, or radiochemistry. A course in statistical methods or a course in computer programming is basic to all programs.

For specialization in clinical pharmacy, courses in the basic medical sciences are necessary in addition to the specialized courses in clinical pharmacy.

For specialization in hospital pharmacy, courses in the basic medical sciences are necessary in addition to the specialized courses in hospital pharmacy and manufacturing pharmacy.

For specialization in pharmacognosy, courses in organic chemistry, biochemistry, and plant physiology are basic to most programs. These are generally best supplemented by courses in plant anatomy, taxonomy, microbiology, mycology, specialized courses in organic chemistry, analytical chemistry, and physical chemistry.

All graduate students are encouraged to pursue additional courses in the pharmaceutical sciences other than their fields of specialization. Specific recommendations based upon individual interests, and information concerning courses may be obtained from the chairman of the department concerned or from the Graduate Program Adviser.

Master of Science

A student in this program must present at least 27 credits of course work, exclusive of thesis and nonthesis research. He must complete a research project, prepare an acceptable thesis, and pass a Final Examination.

The student must present a certificate of proficiency in one foreign language.

Doctor of Philosophy

A student in this program must present a minimum total of 45 credits of course work, exclusive of dissertation and nonthesis research. The credits earned for the master's degree may be applied toward the doctor's degree. The student must pass a General Examination for admission to candidacy for the doctor's degree, complete a research project, prepare an acceptable dissertation, and pass a Final Examination. The research for the doctor's degree must be done at the University of Washington. The doctoral student must present a certificate of proficiency in one foreign language prior to the General Examination.

PHARMACEUTICAL CHEMISTRY

The Department of Pharmaceutical Chemistry offers, for undergraduate students, courses which deal with the application of chemistry to the study of substances used in pharmacy and medicine. Advanced courses covering specialized techniques in pharmaceutical chemistry and medicinal chemistry are presented at the graduate level.

Students who have been admitted for work toward a Master of Science or Doctor of Philosophy degree should contact the chairman of the Department before registration.

PHARMACOGNOSY

Pharmacognosy deals with the biologic and chemical study of natural drug products employed as pharmaceuticals and medicinals. The Department of Pharmacognosy offers courses in the general aspects of plant and animal drug principles, including their sources, isolation, biosynthesis, identification, and uses. Other courses of advanced nature include the subjects of hormones, alkaloid biosynthesis, problems in drug plant cultivation, and pertinent current topics.

These courses are also available to qualified students from related science areas. The Department directs the activities of the Drug Plant Gardens and Laboratory. An extensive collection of living plants is maintained for experimental use.

Students who have been admitted for work toward a Master of Science or Doctor of Philosophy degree should communicate with the chairman of the Department before registration.

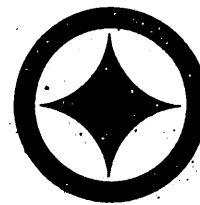
PHARMACY AND PHARMACY ADMINISTRATION

The Department of Pharmacy and Pharmacy Administration presents courses in pharmaceuticals dealing with the design of drug dosage form and the effect of pharmaceutical form on drug activity, as well as courses directly concerned with pharmacy practice and its management.

Building from a base of general education and applied sciences, individual courses offer studies of practice in

different environments, such as the general commercial pharmacy, the patient care areas of medical institutions, and the hospital pharmacy. Postgraduate work is made available in continuing education, pharmaceuticals, hospital and clinical pharmacy. Several service courses are offered to nonmajors from other divisions of the University.

Students who have been admitted for work toward a Master of Science or Doctor of Philosophy degree should communicate with the chairman of the Department before registration.



PUBLIC HEALTH AND COMMUNITY MEDICINE

Acting Dean

Donovan J. Thompson
F358 Health Sciences Building

Associate Dean

John P. Fox
F262 Health Sciences Building

Department Chairmen

Edward B. Perrin, Biostatistics
F361 Health Sciences

James McCarroll, Environmental Health
F356 Health Sciences

E. Russell Alexander, Epidemiology and International
Health
F263 Health Sciences

Robert W. Day, Health Services
F463 Health Sciences

George E. Kenny, Pathobiology
F161 Health Sciences

Professors

E. Russell Alexander, Robert W. Day, John P. Fox, N.
Robert Frank, J. Thomas Grayston, Sen-itiroh Hako-
mori, George E. Kenny, John A. H. Lee, Kenneth M.
McCaffree, James R. McCarroll, Edward B. Perrin,
Donald R. Peterson, Donovan J. Thompson, San-pin
Wang

Associate Professors

Kathleen Archibald, Abraham Bergman, Ann Browder,
David P. Discher, Irvin Emanuel, Richard A. Kron-
mal, Peter Kunstadter, G. Spencer Reeves, Richard
Smith

Assistant Professors

R. Palmer Beasley, Edwin S. Boatman, Norman Bres-
low, Peter Breyse, Marion K. Cooney, Polly Feigl,
John Fish, Hjordis M. Foy, James L. Gale, Betty S.
Gilson, Carrie E. Hall, Jack B. Hatlen, Cho-chou Kuo,
Arthur E. Lagace (acting), John E. Milner, William C.
Richardson, Bertina Wentworth

Instructors

Paula Diehr, Kashinath Patil, Thomas Seifert, Patricia
Wahl

Lecturers

Richard Hibbard, William Mitchell, Karen VanDusen

Adjunct Associate Professors

James Anderson, Caswell Mills

Research Professor

Robert A. Phillips

Research Assistant Professor

Harley H. Bovee

Research Associates

Sanittar P. Dhir, Richard Hall, Kathleen Jackson,
these computers is located in the Health Sciences

Goldy Kleinman, Carnick Markarian, Ruth McMahan, Joseph Okimoto, Cornelis Ploeg, Shigeru Sato, Lowell Sever, Elisheva Simchen

The School of Public Health and Community Medicine was established at the University of Washington July 1, 1970, becoming the seventeenth such school accredited in the United States and the only one in the Northwest. The faculty; the educational, training, residency, and research programs; and the physical space of the former Department of Preventive Medicine in the School of Medicine provided the nucleus for the new School. It is comprised of five departments: Biostatistics, Environmental Health, Epidemiology and International Health, Health Services, and Pathobiology. Its mission and objectives are defined in terms of leadership, research, training, and service—all dedicated to shaping the structure and policies of the "new" public health.

Existing and projected training programs are characterized by their dependence on the research and service programs of the School, by the careful selection of students, by emphases on high quality and flexibility for adaptation to the needs and interests of individual students, and by utilization of existing relevant strengths within other units of the University. Through its academic programs the School is designed to produce qualified investigators and teachers, innovative leaders to direct and coordinate community health programs, and highly trained specialists such as epidemiologists, medical care administrators, industrial hygienists, and biostatisticians.

School Facilities and Services

The basic facility for housing the faculty, students, staff, and the administrative offices, and for "in house" research and research training is a \$2,500,000 six-story building constructed in 1966 in the Health Sciences complex. Well equipped laboratories serve the Departments of Pathobiology, Environmental Health, and Epidemiology and International Health, and contain facilities for work in biochemistry, immunochemistry, microbiology, toxicology, electron microscopy, and industrial hygiene. Students have ready access to the large Health Sciences Library with its comprehensive collection of references and text books (115,000 volumes) and some thirty-three hundred journals relevant to all health professions.

The School maintains its own IBM 1130 computer with a number of accessories to expand its storage capacity and speed of operation. Projects requiring a larger computer capacity can be handled through the Computer Center. A terminal providing easy access to

Building and is managed by the Department of Biostatistics. Calculating equipment with a range of capabilities is widely distributed throughout the school. Extensive facilities for animal experimentation, including experimentation with primates, are available.

The school also maintains faculty in a foreign base on Taiwan where opportunity is provided for research and training in areas relevant to international health and in comparative studies related to diseases of world-wide occurrence and to delivery of health services. Affiliations exist with the U.S. Naval Medical Research Unit No. 2, and the Institute of Public Health, National Taiwan University. Local affiliations important to public health and community medicine include the University Hospital, many other Seattle hospitals and medical centers, state and community official and voluntary health agencies, and Model Cities.

Graduate Programs

Graduate Program Adviser

John P. Fox

F262 Health Sciences Building

Programs are available leading to Master of Public Health, Master of Science, and Doctor of Philosophy degrees. A prior doctoral degree ordinarily is required for the school-wide Master of Public Health program, and training is offered by the School's entire graduate faculty, although each student develops an area of specialization. Training for the master's or doctoral degree is offered by the faculties of departments or groups. All programs are flexible and are designed to meet the background and needs of the individual student. In general, master's-level training requires a year of academic course work and another year of research, culminating in a written thesis. Doctoral training requires a minimum of three years more or less equally divided between courses and research. Admission to any of the degree programs requires a baccalaureate degree from an accredited college or university, admission to the University of Washington Graduate School, and usually at least a 3.00 grade-point average in the final two undergraduate years. Inquiries should be addressed to the Graduate Program Adviser unless otherwise indicated.

Master of Public Health

The school-wide Master of Public Health degree is intended for the student with an extensive background in human health and biology. In addition to meeting the general requirements for admission to the Graduate School, an applicant for admission to the M.P.H. program will be evaluated competitively with respect to:



(1) academic ability; (2) adequacy of preparation (a prior doctoral degree in a health field or other appropriate qualification based on education, prior experience and training); (3) intent to pursue a career utilizing the training; and (4) acceptability to the department or departments that may become responsible for supervising the student's work in his designated area of concentration.

All students in the program must choose an area of concentration, usually corresponding to one department (biostatistics, environmental health, epidemiology and international health, or health services), and, in addition, must complete a project leading to a written thesis. An applicant should indicate his desired area of concentration to ensure that resources exist within the School to complete a thesis project.

Other requirements include (a) a minimum of 69 credits, including 9 thesis credits, and at least 30 course credits exclusive of research and seminar credits; (b) for breadth, 13 credits in the following "core" courses: PC BS 511 Medical Biometry I (3), PC EH 511 Environmental Health (3), PC EP 511 Principles of Epidemiology (3), PC HS 511 Health Services and Medical Care (4); (c) for depth, at least 9 credits, in addition to the preceding "core" credits, in courses offered by the student's major department. To complete the total of 69 credits usually will require at least six quarters (two academic years). A student may be exempted from required courses when he can establish competence in the area.

For University of Washington medical students a concurrent M.D.-M.P.H. degree program can be arranged with concentration in any of the four departments. In most cases a program satisfying the requirements for the M.D. and for the M.P.H. can be completed within four years.

Master of Science

This degree, requiring approximately the same number of credits and time as the M.P.H., is offered through two Graduate School interdisciplinary groups, the Public Health Studies Group comprised of all graduate faculty in the School of Public Health and Community Medicine, and the Biomathematics Group that includes certain faculty from the Departments of Mathematics, Physiology and Biophysics, Genetics, Oceanography, and Zoology, as well as the School of Public Health and Community Medicine and the Colleges of Fisheries and Forest Resources.

The programs administered by the Public Health Studies Group include the specializations of environ-

mental sanitation, industrial hygiene and safety, biostatistics training for health services research, health services administration and planning, epidemiology and international health, and pathobiology (the biology of infectious agents). Admission usually requires, in addition to a bachelor's degree and acceptance by the Graduate School, a background of adequate preparation for the student's particular field of interest.

A doctorate in a health field is desirable for admission to the *epidemiology and international health* specialization, although applicants will be considered if they have master's level or higher training in a relevant area such as microbiology, anthropology, biostatistics, or nursing.

Students taking the *environmental health specialization* (environmental sanitation or industrial hygiene and safety) are prepared to serve as sanitarians, industrial hygienists, and environmental health management specialists for upper-echelon positions in environmental health programs in official health agencies, or in other government agencies utilizing environmental control or management personnel. They may also serve private industry, educational institutions, and in private consultation capacities. It is expected that applicants will have preparation in the relevant biological, physical, and social sciences areas. Preference will be given those who have had undergraduate education or experience in environmental health practice. Students with such a background may complete their programs in six quarters. Those without it should expect to take seven or eight quarters, including field training.

The *biostatistics specialization* prepares the student for technical positions in health research organizations and health care agencies. It emphasizes mastery of quantitative methods (statistics, operations research, systems analysis), elements of computer programming and data processing, and courses in epidemiology, health economics, health administration, and related areas. A supervised period of work is included in a setting appropriate for gaining experience in the area. Applicants should have an interest in the quantitative assessment of the state of health of population groups and in the method and technique for judging the effectiveness of programs designed to conserve or improve health.

The *health services administration and planning specialization* accommodates students in one of three areas of concentration: institutional administration such as hospitals, etc.; medical care organization and administration relating to group practices, insurance and other organizational health services delivery programs, and health planning as illustrated by comprehensive health planning agency programs and activities. The

course of study includes a summer internship in an institution, agency, or program. Applicants should present a background indicating an interest in this field.

The objective of the *epidemiology and international health specialization* is to produce future academicians, highly qualified as investigators and teachers in the area of epidemiology, and well trained practitioners of epidemiology. The curriculum gives major emphasis to biostatistics and epidemiology but also is flexible in content to serve the particular goals of the individual student. The conduct of an independent study (original research or field project) constitutes the most important aspect of the program. Preference for admission is given to students holding doctoral degrees in health fields.

The *pathobiology specialization* prepares the student for a career as a teacher, investigator, or manager of a clinical or public health laboratory. Pathobiology is defined as the study of pathogenic biological agents and their interactions with a host. The agents of interest range from multicellular parasites to viruses and also include tumors as a class of endogenous parasites. Host responses studied are primarily immunologic, although pathological and biochemical responses also are investigated. Training is solidly based in molecular biology with specific application to the study of infectious agents and host responses. Major course work in pathobiology is supplemented by appropriate courses in biochemistry, microbiology, epidemiology, and biostatistics. Admission preference is given to those whose baccalaureate degree was in biology or biochemistry.

The Biomathematics Group, in which Department of Biostatistics faculty participate, offers training in statistical theory, mathematics and statistical analysis. Career objectives include academic teaching and research, as well as positions in research or administrative agencies of federal or local government and private corporations. A career example might be the statistician who specializes in mathematical ecology. Fundamental courses in mathematical statistics and quantitative methods are generally integrated into individual programs of study through cooperative arrangements with the Department of Mathematics and the Center for Quantitative Science. This flexibility gives an excellent opportunity for biostatistics students to acquire a broad background in modern theoretical developments applicable to research activities in the health sciences. Depending upon their background, students take about half their course work in mathematics and mathematical statistics and the balance in biostatistical and biological courses from such disciplines as biostatistics, health services, quantitative science, fisheries, zoology,

genetics, or physiology and biophysics. Information concerning the graduate program in Biomathematics will be found in the *Interdisciplinary Graduate Degree Programs* section of this catalog. Inquiries concerning this program should be addressed to the Group Chairman, Dr. Edward B. Perrin.

Doctor of Philosophy

This degree is offered both by the Department of Epidemiology and International Health and by the Biomathematics Group. Both differ from the master's program principally in the nature and scope of the independent study project and the resulting dissertation, and in the expected time required to complete the program (a minimum of three years).

The student in this program studies the distribution of disease in man and seeks to identify factors that influence its occurrence in human populations. Course work includes a basic series on epidemiology, one or more courses in biostatistics, and seminars in both these fields. Electives are dictated by the individual student's interest. Soon after admission, he begins participation in an on-going research project to gain familiarity with specific techniques and research methods. He may plan and execute a particular minor phase of the project. The applicant for this program must have a degree in medicine, dentistry, or veterinary medicine, or be a qualified holder of a master's or higher degree in a relevant field such as nursing, microbiology, biostatistics, or an appropriate social science. Others who will be considered are students enrolled in the School of Dentistry or the School of Medicine, and recommended for the concurrent D.D.S.-Ph.D. or M.D.-Ph.D. program.

The research component of the curriculum in the biomathematics doctoral program may be concerned with application of statistics and probability to problems of medicine, biology, or public health, and usually will include the development of new theory or the investigation of the applicability of existing theory and methods to new situations. Students may enter the program from undergraduate majors in mathematics or statistics or any biological field. A thorough knowledge of calculus and linear algebra is required. Students whose mathematics preparation is minimal may expect to take advanced calculus and linear algebra in their first year. Undergraduate work in the natural and social sciences also is desirable. Inquiries should be addressed to the Group Chairman.

Postdoctoral Training

The School offers three-year residencies in general preventive medicine, approved by the American Board



of Preventive Medicine, for training in the four sub-specialty areas of epidemiology, environmental health, community medicine, and health services administration. Opportunity for combined residencies in general preventive medicine and pediatrics now exists, and a combined program with internal medicine is being developed. Depending on whether the candidate has taken a straight internship (counted as one year of residency in pediatrics and medicine), the residency requirements for two specialty boards may be satisfied in four or five years post-internship. Also approved by the American Board of Preventive Medicine is a residency in public health offered jointly by the School, and the state, and Seattle-King County health agencies. For those possessing M.P.H. degrees from other universities, these are two-year programs. For other qualified candidates the program is for three years during which they will earn the M.P.H. degree.

Graduates of accredited medical schools in the United States or Canada who have completed at least one year of internship are eligible for admission to these residency programs. Those seeking regular board certification must be licensed to practice in at least one of the states or in Canada.* Acceptance into the program is on a competitive basis, the criteria being academic performance in medical school, overall professional competence as judged from letters of recommendation from former teachers and supervisors, and both motivation in seeking training and relating it to career objectives as judged from narrative statements, and personal interview when possible. All residency programs include formal course work as required by the American Board of Preventive Medicine, independent research, and supervised field experience.

Possessors of M.D. or Ph.D. degrees, not interested in degree programs or residency training, may be accommodated in advanced, specialized research training in their areas of interest. Such programs generally would be for periods of not less than one year and would be under the supervision of individual senior faculty members. Interested persons may direct inquiries to the particular faculty member with whom they wish to work (if known to them) or to the appropriate departmental chairman.

Predoctoral and Postdoctoral Fellowships

Inquiries and application requests should be made to the person under whom training is desired (if known) or to the chairman of the appropriate department. Letters of inquiry should clearly indicate the writer's background, relevant work experience, the type of training desired, and career goals. The proposed preceptor will

request appropriate supporting documents, which ordinarily will include academic transcripts and at least three letters of recommendation.

Admission

Inquiries concerning both degree programs and residency training and related requests for applications should be directed to the Graduate Program Adviser. An exception would be those inquiries that concern the biostatistics or biomathematics program specifically, and these should be sent to the Chairman of the Biomathematics Group. Letters of inquiry should indicate as clearly as possible the writer's educational background, relevant work experience, general area of interest, type of training desired, and possible career goals.

The Graduate School of the University of Washington has administrative responsibility for graduate study in whatever division of the University it is undertaken. The Graduate School coordinates admissions and approves programs of study leading to graduate degrees. The student undertaking graduate education, therefore, must be admitted to the Graduate School as well as to the school, college, or group in which he wishes to study. Graduate School application forms and School of Public Health and Community Medicine forms will be sent to all persons interested in degree programs offered by this School. The School forms also will be sent to prospective residents. An application will be considered complete when the following have been received:

By the Graduate School Admissions Office:

- (1) The Graduate School application form
- (2) Application fee
- (3) Copies of two official transcripts covering all previous university-level education

By the School of Public Health and Community Medicine:

- (1) The SPHCM application form
- (2) A narrative statement indicating the education and career goals of the applicant
- (3) Three letters of recommendation from persons competent to evaluate the applicant's professional abilities

Most training begins with the Summer or Autumn. A student in this program is expected to meet the dis-

*Foreign medical graduates who do not possess such a license but satisfactorily complete three years of approved residency training may seek special certification from the board (not valid in the U.S. or Canada).

Quarter. Some programs allow entry at other times of the year. The deadlines for applications are Summer Quarter, April 1; Autumn Quarter, April 1; Winter Quarter, October 1; Spring Quarter, January 1. Decisions will be announced within a month of these deadlines. Applicants are strongly encouraged to submit their applications well in advance of the deadline. Those whose native language is not English must establish their competence with that language. This may be accomplished by passing an English language proficiency test, such as TOEFL.

Financial Aid

Applicants often will need financial assistance and are invited to apply. All funds currently available are from federal sources and can be awarded only to U.S. citizens and foreigners possessing immigrant (resident) visas. They are awarded on a competitive basis and usually are announced at the time of notification of acceptance. Stipends begin at \$2,400 per 12-month year for full-time predoctoral students, and at \$6,000 for full-time postdoctoral trainees. A sum of \$500 per dependent per year is also available. Larger stipends may be available to trainees with relevant experience beyond their base degree.

Undergraduate Program

Advisers

Jack B. Hatlen
F350 Health Sciences

Karen Van Dusen
F561 Health Sciences

The Department of Environmental Health, School of Public Health and Community Medicine, offers an environmental health curriculum leading to a Bachelor of Science degree. This program prepares individuals for positions as environmental health specialists responsible for the recognition, identification, and change of environmental conditions hazardous to man. Such a specialist must have the skills necessary to motivate and educate the public toward change, as well as the ability to enforce environmental and public health laws.

tribution requirements as established by the College of Arts and Sciences. He should take additional courses in the social sciences and humanities that will help him develop an awareness and understanding of the social issues and limited skills or techniques in community planning and communications.

The environmental health major is also required to take technical courses important to later professional work. These courses cover environmental health problem areas such as water and food sanitation, air and water pollution, vector control, solid waste disposal, housing, institutional sanitation, occupational health, industrial hygiene and safety, and noise control. Toward the end of the student's academic training he is required to write on an environmental health topic he has investigated through research and as a study project. Summer field training is highly recommended and may be taken between the junior and senior year, during the senior year, or directly following graduation.

Graduates from this program generally will be employed by health departments and similar regulatory agencies. They will be in constant contact with the public in a never ending variety of problem-solving situations aimed at enhancing man's environment as well as lessening its disease potential.

Graduation Requirements

All requirements for a degree from the College of Arts and Sciences must be met.

A total of 50 credits is required in environmental health and closely related subjects.

Required environmental health courses and related health services, biostatistics, and epidemiology courses include: PC EH 411, 440, 441, 442, 450, 453, 457, 480, 499; PC HS 323, 424; PC BS 472; PC EP 420.

Additional required and/or related courses: Chemistry 140, 150, 151, 160, and 231, 232 or 102; Biology 101-102 or 210, 211, 212; Physics 114, 115, 116; Mathematics 105 or 106; Microbiology 301; English 171 or 271; Business, Government, and Society 200; Economics 200; Urban Planning 400.



SOCIAL WORK

Dean

Scott Briar
204 Eagleson Hall

Associate Dean

Calvin Y. Takagi
205 Eagleson Hall

Assistant Dean

Jack A. N. Ellis
207 Eagleson Hall

Professors

Arthur C. Abrahamson, Scott Briar, Charles B. Brink, Arthur S. Farber, David H. Gronewold, Marguerite Hunt, Thomas Fred Lewin, Henry W. Maier, Lawrence K. Northwood, Jack R. Parsons, Grace D. Reiss, Edmund A. Smith (emeritus), Florence R. Stier, Calvin Y. Takagi

Associate Professors

James Anderson, David J. Beatty, William C. Berleman, Neil F. Bracht, Ronald B. Dear, Moya M. Duplica, Jack A. N. Ellis, James Goodman, M. John Griswold, Carl Frederick Hanneman, James E. Herrick, Benson Jaffee, Jerry L. Kelley, James W. Leigh, Catherine J. Macdonald, Robert W. Macdonald, Murray B. Meld, Sidney Miller, LeNora B. Mundt, Margaret C. Mykut, Rino J. Patti, Gerald W. Pepper, Herman Resnick, Naomi G. Streshinsky, Edward C. Teather

Assistant Professors

Allethia L. Allen, Janice M. DeLange, James G. Hoffman, Anthony Ishisaka, Doris Jones, Robert Mears, Jerome R. Miller, Eugene Mochizuki, Robert Nelson, Bruce C. Weller, Ann M. Yablonski

Instructor

Roberta W. Reed

Lecturers

Vernon E. Bryant, Ida B. Chambliss, Agnes E. Dixon

The marked growth in the magnitude, complexity, and intensity of such social problems as poverty, racism, urban unrest, physical and mental illness, and crime and delinquency during the last forty years has generated the need for new, enlarged, and more effective social welfare programs to meet these problems. In response to this need, as well as to the rapid changes occurring in society in the broad field of social welfare and in the profession of social work, the School of Social Work has developed programs that have as their primary objective the preparation of persons for competent performance in a wide variety of professional roles and functions. The School's undergraduate, graduate, and continuing education offerings are designed to equip students possessing differing academic and experience backgrounds with the knowledge and skills needed for improved practice.

Consistent with the aims of the University, the program of the School of Social Work has three major dimensions: (1) the transmission of existing knowledge through the professional curriculum and participation in instructional offerings of other units of the University; (2) the acquisition of new knowledge through research and scholarship by the faculty and students; and (3) service to the community through collaborative training programs, sponsorship of professional institutes, and consultation.

Admission

Admission to the graduate professional program of the School of Social Work requires formal admission to the Graduate School as well as to the School of Social Work; hence, separate application forms should be submitted.

Foreign students are advised to allow three years for completion of the degree program. One year of previous employed experience involving use of English is highly desirable.

GRADUATE PROGRAM

Graduate Program Adviser
Catherine J. Macdonald
207 Eagleson Hall

Master of Social Work

This is a two-year program of study leading to the Master of Social Work degree. The areas of practice in which graduates are prepared to accept positions are diverse. To name but a few, these include: poverty programs, public and private health and welfare agencies, and community planning bodies. Consistent with its responsibility to the profession and to the public, the School exercises discretionary judgment concerning the suitability of students for admission to or continuation in the degree program.

The curriculum is composed of courses concerned with issues of social welfare; the philosophy, organization, and administration of service delivery systems; the understanding of human behavior and social change; the understanding of research methods. A field instructional experience or practicum integral to the educational program is offered.

In the second and third quarters this field experience is concurrent with class work; in the fourth and fifth quarters it is a block plan wherein students will spend up to four and a half days a week in the field. Thus, through a blending of theory and practice, the student acquires the knowledge and skill necessary for professional competence.

In the course of his graduate education, the student will, with the assistance of his academic adviser, choose one of three major tracks: Human Services, Community and Organizational Development, Research Services. Within each of the tracks, the student will elect a major area of specialization that defines the focus of his didactic and practicum courses.

Track I. *Human Services*

Choices for major:

1. Childhood and Adolescence
2. Adulthood
3. Aging

Track II. *Community and Organizational Behavior*

Choices for major:

1. Social Policy and Social Planning
2. Community Development and Social Action
3. Organizational Development

Track III. *Research Services*

Major areas to be specified. For more information contact the School of Social Work.

Finally, each student must choose either a minor area of specialization or a program of supporting elective courses from within the offerings of the School of Social Work or from other departments of the University.

Requirements for the degree include completion of the prescribed curriculum and a minimum of three quarters in residence at the School. Each student must present a total of 72 quarter credits in passing work and maintain a 3.00 average in all courses numbered 400 and above. In addition, the student must present a minimum of 65 credits of B work or better. The degree is awarded on the basis of the student's competence in theory and practice, as evidenced through satisfactory completion of class and field coursework, and advisory committee assessment.

In addition to tuition costs and general fees, each student must plan for the costs of transportation to and from the field instruction agencies.

Courses for Non-Social Work Majors

Class enrollment permitting, and with permission, a number of courses are available to students enrolled in other graduate and professional departments of the University. These are: Social Work 502, 503, 504, 509, 510-521, 550, 551, 552, 570, 580, and 587.



Financial Aids

For information concerning scholarship awards, fellowships, stipends, and loans, consult the Office of Financial Aids, 170 Schmitz Hall, 1400 N.E. Campus Parkway, Seattle 98195, and the Chairman, Scholarship Committee, School of Social Work. A limited number of awards are available to graduate students.

UNDERGRADUATE PROGRAMS

Director

William C. Berleman
109 Eagleson Hall

Admission

The School of Social Work participates in a program leading to an undergraduate major in social welfare in collaboration with the General Studies program of the College of Arts and Sciences. Students preparing for admission to a professional school of social work, students who are interested in securing social welfare positions that do not require professional education, and students who wish a liberal arts background with concentration in the social sciences and social welfare may satisfy their interests by enrollment in this major.

The social welfare program is designed to provide students with the basic liberal arts and with an introductory experience in the theory and practice of social work. Students contemplating the major spend their freshman and sophomore years as premajors, fulfilling the College of Arts and Sciences distribution and pro-

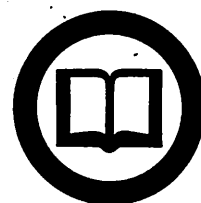
ficiency requirements. Students declare for the major at the end of their sophomore year and thenceforth are advised by the School of Social Work's undergraduate social welfare adviser.

The introductory courses to the field of social welfare and the theory and practice of social work are taught during the students' junior and senior years. The theory and practice courses combine classroom study with an extended practicum in a number of social agencies where students participate directly in the giving of social services.

In addition to social welfare and social work courses, each student is encouraged to pursue in other departments courses that explore some identifiable facet of social welfare or social service. Illustrative academic themes might be the child and family in contemporary society; social welfare policy and the legislative process; minority groups and the provision of social services.

An individual thesis is required for graduation. The thesis might serve to synthesize the student's academic theme or examine some unexplored aspect of social welfare history, philosophy, institutions, or services. Because a student's academic theme and senior thesis are usually unique, the student participates with the undergraduate social welfare adviser in determining a suitable theme and thesis topic.

Social Work 300, Field of Social Welfare, and Social Work 409, Readings in Social Welfare, are available as service courses to students in other schools and colleges of the University.



LAW

Dean

Richard S. L. Roddis
207 Condon Hall

Associate Deans

Robert S. Hunt
203 Condon Hall

John C. Huston
216 Condon Hall

Professors

William R. Andersen, William T. Burke, Charles E. Corker, Richard Cosway, Harry M. Cross, Robert L. Fletcher, Marian G. Gallagher, Alfred Harsch (emeritus), Dan F. Henderson, Roland L. Hjorth, Robert S. Hunt, John C. Huston, Ralph W. Johnson, John M. Junker, Richard O. Kummert, Robert Meisenholder, Arval Morris, Rudolph H. Nottelmann (emeritus), Cornelius J. Peck, John R. Price, Roy L. Prosterman, Luvern V. Rieke, Richard S. L. Roddis, William N. Rodgers, Jr., Marjorie D. Rombauer, Warren L. Shattuck, William B. Stoebeck, Robert L. Taylor (emeritus), Philip A. Trautman, Lehan K. Tunks

Associate Professors

James H. Harding, Donald S. Chisum, Francis W. Smith, Jr.

Assistant Professors

Geoffrey L. Crooks, Yasuhiro Fujita, James H. Hardisty, Virginia B. Lyness

The School of Law

Established at the University in 1899, the School of Law is housed in Condon Hall, named for John T. Condon, organizer and first Dean of the School. There are plans for a new building to be ready for occupation during the 1973-74 academic year. A member of the Association of American Law Schools, the School is approved by the Council of the Section of Legal Education and Admissions to the Bar of the American Bar Association.

The programs of the School of Law are designed to help students develop an understanding of law, the processes by which it operates, and the social, economic, and political context in which it functions. Without in any way ignoring technical legal knowledge, the School of Law recognizes that legal education must be broadly based for its recipients to contribute effectively to shaping society's goals and developing the means of achieving these goals.

Graduates of the School of Law are prepared to practice law anywhere in the United States and other common-law countries. The curriculum and methods of instruction are designed to develop the student's highest potential, both in school and thereafter. Persons with a legal education, by virtue of their developed abilities to analyze and comprehend, are able to succeed in many



careers not directly connected with representation of private clients.

The School follows a selective admissions policy and stresses small classes and opportunities for individual research. Students are encouraged to rely on their own initiative and to develop their own powers of perception. Classroom discussion in which students participate fully is one means used to assist in the development of such powers. In the first year, each student will study one of his basic subjects in a small section of about 25 students. Independent research projects, either in the context of a seminar or under the supervision of an individual faculty member, are emphasized for the same purpose.

School Facilities and Services

Law Librarianship Program

The Law School provides facilities and instruction for lawyer candidates for the Master of Law Librarianship degree, or for other students of the Graduate School of Librarianship who elect specialized training in law librarianship. This program is described in the Announcement of the School of Librarianship.

Law Library

The Law School Library contains more than 210,500 volumes; included are decisions of all English and American courts of last resort, and the reported decisions of all lower courts in the United States. Extensive collections of English, American, and colonial statutes are available, as well as copies of all legal periodicals published in English.

In addition, the Library has one of the finest collections of Japanese law materials in the United States, other substantial Asian collections, a growing collection of Russian materials, and most of the titles indexed in the *Index to Foreign Legal Periodicals*.

Undergraduate Education

The School of Law does not prescribe a definite undergraduate curriculum for its applicants. The wide range of lawyers' tasks and the difference in offerings from school to school preclude such an approach. With the assistance of his college or university adviser, a student should follow his own intellectual interests in developing his undergraduate program. However, there are certain goals which every student thinking of law school should keep before him in planning his college program. He should strive to acquire the ability to read, write, and speak the English language well; to gain a critical understanding of values and human institutions, political, economic, and social; and to understand and develop in himself creative power in thinking. Not only mem-

ory, but also accomplishment in understanding; not just knowing, but knowing why and how, should be the objectives.

College advisers will help students decide how best to accomplish these ends. The School of Law faculty will be glad to assist in program planning. For additional information, see the current *Prelaw Handbook*, published in October and prepared by the Law School Admission Test Council and the Association of American Law Schools. This book includes material on the law and lawyers, prelaw preparation, applying to law schools, and the study of law, together with individualized information on most American law schools. It may be obtained at college bookstores or ordered from Educational Testing Service, Princeton, New Jersey 08540.

Student Activities

All students of the School of Law are members of the *Student Bar Association* whose purpose is to represent law students to the general community, coordinate student activities, and to promote continuing interchange and good relations with the faculty and staff of the School of Law and with the Bar.

The Student Bar Association publishes a journal of news and thought, sponsors a wide variety of programs and coffee hours, participates in intramural sports and, through membership of faculty committees, participates in the making of decisions which affect the School. It is governed by an elected president, vice president, secretary, and treasurer who, along with two representatives from each class, form an Executive Board that holds frequent open meetings. The Association is affiliated with the Law Student Division of the American Bar Association and the president is an ex officio member of the Young Lawyers Committee of the Washington Bar Association.

The School of Law has a chapter of the *National Lawyers' Guild*, a national group that seeks to develop the lawyer's awareness of his responsibility in society. The Chapter participates in a wide variety of civil rights and other projects.

Students working in the *Legal Aid Program*, under the Legal Services Center, perform a vital service in the Seattle area by providing legal aid to those who cannot afford the services of an attorney. Under the supervision of a faculty adviser or of Center attorneys, students perform all the normal pre-trial functions of attorneys, thus acquiring valuable experience for their later professional careers.

Legal Aid to McNeil Island/Monroe Prisoners (LAMP) provides the interested student an opportunity to fur-

nish legal services to prisoners at the federal penitentiary at McNeil Island, Washington, and the Washington State Reformatory at Monroe. Students travel to the respective prisons to interview prisoners and work under the direction of a member of the local Bar.

An extensive *moot court program* at the School of Law provides students with experience in research, brief writing, and oral argument. In conjunction with the legal analysis course taken in the first year, all students participate in the first two rounds of moot court competition at the end of Spring Quarter. Competitions are judged by panels of three, consisting of a faculty member, an attorney, and an upper-class student for the first two rounds, and judges for the final round.

In the second year, a student may compete for a place on one of two three-man teams that compete in regional and national moot court competition. There is a competition later in the year for places on the Law School team that competes annually with a team from the University of British Columbia Law School in a unique moot court involving an aspect of international law.

All moot court activities are directed by the Moot Court Honor Board, a student group choosing its new members on the basis of performance in moot court activities.

Interested students may be appointed by the Student Bar Association to student-faculty committees where students and faculty work closely on a variety of topics of concern to the School of Law, including admissions, scholarships, and curriculum design.

Recent adoption by the Washington Supreme Court of *Rule 9* has resulted in allowing students who have completed two-thirds of the Law School program to be admitted to certain limited forms of practice before the courts of the state of Washington, subject to supervision by an attorney and approval of the Dean of the School.

Membership of the *Minority Law Students Association* consists of Asian, Black, Chicano, and Indian law students. Its purpose is to aid minority students in obtaining law degrees, whether the help needed be academic, financial, or just plain moral support. The organization is geared toward assisting the Law School administration in identifying and fulfilling whatever needs the minority students might have. The M.L.S.A. has become an important part of the Law School community.

The *Order of the Coif* is a national honorary legal society with a chapter at the University. The order encourages scholarship and the advancement of the

ethical standards of the legal profession. Membership is restricted to students who are within the upper 10 per cent of the graduating class.

The *Washington Law Review* is the School's legal periodical. It is published by a student editorial board comprised of a limited number of second- and third-year students and assisted by the law faculty. The *Review* serves as a medium of expression for legal scholars and is devoted particularly to the interpretative and progressive development of the law. It contains articles by judges, lawyers, professors, and authorities in related professional fields. In addition, the *Review* provides an opportunity for students to comment on court decisions and legislative enactments, subjecting these developments to thorough research and intensive analysis.

Since a high quality of writing is required of student members, admission to the *Law Review* staff is determined upon the basis of a student's ability to synthesize legal opinions and creatively incorporate the body of his research and judgment into a written product. All students are eligible to compete for staff membership.

Participation on the *Law Review* is very likely the most rewarding single experience a student can achieve during the Law School years. It provides opportunities to develop skill in research and expression beyond those available in normal classwork activity, and offers a student the chance to have his own work published. Further, *Law Review* membership affords one of the few means by which a student can, during Law School, have a significant impact on the direction of the law.

WashPIRG, Washington Public Interest Research Group, is an attempt to create a student funded and directed public interest group in Washington. WashPIRG will engage in nonpartisan research of such issues of general public interest as environmental preservation and consumer protection, and will make available to the public thorough and objective data so that citizens may form independent conclusions beneficial to the community. WashPIRG hopes to establish a new method to ensure consideration of the public interest in private economic decisions or governmental policies. Research will be conducted on an interdisciplinary basis, emphasizing the value of numerous viewpoints being brought to bear on one issue.

Three law fraternities are represented in the School of Law: Story Senate of *Delta Theta Phi*, Dunbar Chapter of *Phi Alpha Delta*, and Ballinger Inn of *Phi Delta Phi International*. Composed of and governed by law students, these fraternities serve to promote and develop



comradeship, loyalty to the School and to the law, and an understanding of, and devotion to, the finest traditions of the legal profession.

Financial Aid

Financial aid awards are made possible by the generosity of many people, and the recipients' way in law school is made easier by the grants they receive.

Financial aid awards are usually made on a part-grant, part-loan basis. Awards are made principally on the basis of financial need, with scholarship, *Law Review* participation, and other factors sometimes being considered.

Whereas for scholarships, and even some loans, there is no legal obligation to do so, it is expected and urged that recipients of such funds, after graduation and when financially able to do so, will restore the funds to the School of Law so that an increasing number of other students may enjoy the same advantage.

Beginning Students

General: Students with very strong academic credentials and great economic need may receive scholarship or combination scholarship-loan assistance. Application forms may be obtained from the School of Law and should be submitted by February 1 of the year in which the student intends to enter.

Students in Residence

Applications for most financial aid awards are considered by the Committee on Scholarships in July, at which time the Committee can inform itself of the applicant's academic performance during the preceding academic year. Potential applicants may obtain necessary forms at the Dean's Office and should inquire there at an early date concerning presently available funds, possible additional funds, or changes in deadline dates.

Loan funds are also available for which applications should similarly be made.

Additional loan funds are provided by National Defense Student Loans administered by the University. Applications should be directed to the University of Washington Director of Financial Aids, 170 Schmitz Hall, Seattle, Washington 98195, as soon after April 1 of the appropriate year as possible.

In addition, numerous prizes and awards are available for superior academic achievement in the School of Law.

Graduate Placement

The School maintains a placement service to assist students in finding legal positions upon graduation and to provide assistance to alumni in finding positions. It

also aids students in finding part-time and summer clerkships, and assists in their qualifying as legal interns under the Washington court rules.

ADMISSION

When Students May Enter

Beginning students may enter the School of Law only in the Autumn Quarter, and are required to be present, as stated in their letter of acceptance, a few days earlier than the time set for upper-class students.

Requirements for Admission to First-Year Class

Applicants for admission must present a baccalaureate degree from an approved college or university.

Normally, students in the School of Law attend full time and complete their studies in nine quarters.

Law School Admission Test: Each applicant for admission to the first-year class must take the Law School Admission Test administered by the Educational Testing Service, Princeton, New Jersey. A \$12.00 fee is charged by the Testing Service. The test is given annually in February, April, July, and November in numerous locations in the United States and throughout the world. For detailed information, the applicant should write directly to Law School Admission Test, Educational Testing Service, Box 944, Princeton, New Jersey 08540. It is recommended that the test be taken during the academic year preceding the one for which admission is sought and not later than December.

Other Elements: In recent years, the number of applications for admission to the first-year class has by far exceeded the number of places available. In determining which applications to accept, the score received on the Law School Admission Test is but one of many elements considered by the Admissions Council. All other aspects of the applicant's background are taken into account, with great emphasis being placed on the undergraduate record presented. A letter of admission constitutes a judgment by the Admissions Council that the applicant has the capacity and motivation to pursue the study of law successfully. In most instances, the Council's judgment has proved sound.

Procedure To Be Followed

The applicant must complete the following three steps:

- (1) Request a formal application blank from the University of Washington School of Law, Seattle, Washington 98195, and file said application early in the final year of undergraduate study and under no circumstances later than February 1 of the year for which admission is sought.

(2) Request the registrar of each college attended to send official transcripts to the Law School Data Assembly Service (LSDAS), Educational Testing Service, Box 944, Princeton, New Jersey 08540. A fee of \$6.00 is charged by the Testing Service. The Law School Data Assembly Service will analyze the transcripts and send copies to the University of Washington School of Law and other schools at the applicant's request. Registration forms for the LSDAS and LSAT are available in the *Law School Admission Test Bulletin of Information*.

A student expecting a baccalaureate degree in June may have his application considered prior to graduation. Such a student should file transcripts for the first ten quarters or seven semesters of his college work with LSDAS. After completing his college work, the student must complete his application by requesting the registrar of his college to send two official transcripts to the School of Law. Students who last attended or are presently attending the University of Washington need have only one transcript sent to the School of Law. All records become part of the official file and will not be returned or duplicated.

(3) Request the Educational Testing Service, preferably on his test application, to send his Law School Admission test score to the School of Law.

Upon receiving a letter of acceptance, the applicant must submit two permanent passport-size facial photographs (approximately 2" x 2"). The photographs should be submitted prior to registration.

Applicants for admission whose collegiate educations have been received in countries where English is not the usual spoken language may be required to submit evidence of competence in English. On occasion, the Test of English as a Foreign Language administered by TOEFL, 1755 Massachusetts Avenue, Washington, D.C. 20036, will be employed. Such candidates should make their own arrangements with TOEFL, preferably advising the School of Law of their action by sending carbons of the correspondence.

Admission With Advanced Standing

A transfer student may be eligible for admission if he has completed work at a school approved by the Association of American Law Schools, if he is in good standing at the time of his withdrawal (evidenced by a letter from the Dean of the school from which he is transferring), and if he meets the current admission requirements for beginning students at this School. At the discretion of the Dean, credit may be granted for course work taken at another law school.

Transfer applications normally will be granted only if the applicant's record demonstrates that he is capable of doing substantially above average law school work. Where an applicant has completed more than one year of law study, advanced standing will be permitted only in exceptional cases.

The applicant should request application forms and instructions from the School in time to permit filing of the application by July 15.

Readmission After Withdrawal

First-year students: A first-year student who withdraws during the academic year is not eligible as a matter of right to return to the School. Such a student must compete for a place in the class with other applicants in the year he wishes to return. In passing upon an application for readmission, the reason for the withdrawal and the quality of work done prior to withdrawal will be considered.

Second- and third-year students: If a second- or third-year student not subject to dismissal withdraws from school, he is eligible as a matter of right to return, if he does so within twenty-four months of his withdrawal. His readmission thereafter is at the discretion of the Admissions Council.

All students: Any student in good standing required to withdraw because of a military obligation is entitled to return upon the completion of his first tour of military service.

PROGRAMS OF STUDY

The Juris Doctor (J.D.) Degree

The Juris Doctor (J.D.) degree is conferred upon a student who has met the residence requirements and has earned at least 135 quarter credits satisfactory to the School of Law, including all required courses and seminars.

A student enrolled in the School may earn up to 15 quarter credits toward his Juris Doctor degree with course work taken in other units of the University. Approval will be granted at the discretion of the Dean's office upon a showing that such course work will contribute significantly to the student's legal education. School of Law credit will be granted only for courses in which the student receives a grade of C (2.00) or better. Normally, only graduate-level courses will be approved for such credit. Grades received in courses taken elsewhere will not be used in computing a student's grade-point average at the School except that if a failing grade is received, the student will be given a 44-E and the grade will be used in computing his



School of Law average. On occasion, some of this work may be available on a credit/no credit basis only.

Residence requirements: To be eligible for the Juris Doctor degree, a student must complete at least nine quarters of study in residence. A quarter of residence credit is given for each Autumn, Winter, or Spring Quarter during which a student successfully completes at least 12 credits of work. (Although Summer Quarter courses offer regular academic credit, residence credit is awarded for Summer Quarter work only with special permission of the Dean.) In unusual cases, two quarters, in each of which a student earns fewer than 12 but more than 7 credits, may be combined to produce a quarter of residence credit.

A law student is making normal progress toward his J.D. degree so long as his work in each academic year, plus Summer Quarter, is equal to at least one-third of the total credits required for graduation. A full-time student in the School of Law is one who is registered for a minimum of 12 credits per quarter. To complete his work in nine quarters, however, a student must average 15 credits per quarter. No student may register for fewer than 12 nor more than 16 credits per quarter without the approval of the Dean's office. Such permission is granted only to students whose records demonstrate the capacity to assume such a program of studies successfully.

Additional information concerning scholastic and other regulations is available at the Dean's office.

Honor Code

Student conduct is governed under an honor code to which all students are subject. An Honor Court is appointed annually by the Student Bar Association and hears any complaints arising under the code.

Time Demands of Law Study

School of Law studies demand all of a student's time and energy. Students should not plan to engage in outside work during the academic year. Those with financial need should explore fully the School's financial aid program. In addition to scholarship and grant funds, considerable loan funds are available. Use of loan funds is equivalent to making a "capital investment" in one's professional development.

A concurrent program has been developed that leads to a J.D. and an M.B.A. degree from the Graduate School. Information about the course sequence and other details of this program may be obtained from the School of Law or the Graduate School of Business Administration. Other such concurrent programs can be

developed, with the approval of the student's Graduate Program Adviser, the Dean of the Graduate School, and the Dean of the School of Law, that will lead to a J.D. and an advanced degree in another discipline in the Graduate School.

Asian Law Emphasis

The School's postgraduate Asian Law emphasis comprehends course, seminar, and research opportunities for students working toward their first professional degree as well as for postgraduate students in law. Candidates for the first degree may take courses and seminars in Japanese law taught in English that, together with additional supervised research, permit an emphasis on Japanese law. Language-qualified students who do well as first-degree candidates are eligible to apply for the postgraduate program in United States-Japanese transactions.

Postgraduate Degrees in Law

Admission and General Requirements

Applicants for admission to the postgraduate* programs in law must meet the requirements of the faculty in law as well as the requirements of the University Graduate School, and each student should familiarize himself with the general policies, procedures, and regulations of the Graduate School. Statements about admission, scholarship, residence, continuous enrollment, general master's and doctoral degree requirements, and other pertinent information may be found in the *Graduate Study* section of this catalog or in the Graduate School bulletin entitled *Graduate Study and Research*.

Admission applications may be obtained by writing to the University of Washington Director of Admissions, Schmitz Hall, Seattle, Washington 98195.

LL.M. Program

Admission to the LL.M. degree programs, with specialization in Asian Law or in Law and Marine Affairs, is limited to applicants who have received the first professional degree (LL.B. or J.D.) in the United States or in another common law country, and who have a record of superior academic achievement. In the case of the Asian law emphasis, the applicant must be admitted to practice and must be bilingual in English and Japanese or in English and Chinese. Both programs contemplate one year in residence, to include at least 36 credits and an acceptable major research undertaking.

M.C.L. Program

Bilingual lawyers who are graduates of law schools in noncommon-law countries and who present superior

* Postgraduates in Law are graduate students in the University of Washington Graduate School.

academic records may apply for admission to the M.C.L. program. This program also involves one year in residence, to include at least 36 credits with an acceptable major research enterprise.

Ph.D. Program

Admission to the Ph.D. program in Asian Law is limited to exceptional scholar-lawyers who are bilingual (English and either Chinese, Japanese, or Korean). The core of the program is a major creative research project using Asian language sources as well as English language sources. At least two and usually three years in residence is necessary in order to accomplish the work that must be done in order to pass the General Examination that precedes candidacy for the doctoral degree. An acceptable dissertation must thereafter be submitted to complete the degree requirements. The Candidate may spend a year abroad while working on the dissertation but must be in residence during the quarter in which he receives the degree.

Summer Quarter

The School of Law offers a limited number of courses during Summer Quarter for those of its students who desire to take additional subject matter, and for students from other law schools who have completed at least one year of study and who wish to do additional work for credit in their respective schools.

The Summer Quarter courses also afford opportunity for further study by practicing lawyers who desire systematic instruction in specialized areas of expanding significance.

Students with advanced standing who wish to transfer to the University of Washington School of Law as degree candidates and who desire to begin their study in the Summer Quarter must comply with admission procedures.

CURRICULUM

First-Year Program

First-year classes in law schools throughout the country traditionally have tended to be large. At several schools, classes with from seventy to a hundred and seventy students have not been uncommon. Since World War II, an effort has been made to reverse this trend, and many law schools, including the University of Washington's, have attempted to accomplish this reversal by introducing first-year courses in the techniques of analysis, writing, and research.

While this program at the University of Washington School of Law has shown its value and is to be intensi-

fied, the faculty of the School of Law has decided that more should be done to individualize first-year instruction. To this end, three basic first-year courses—Contracts, Property I, and Torts—have been divided into three sections. In each course, one section will be large and two will have from 23 to 25 students. Each first-year student will be assigned to one of the small sections in one of these subjects. In this way, the School of Law hopes to combine the very real resource advantage of a fairly large school with the equally real advantage offered by small classes. The large sections will be handled in traditional fashion. The small sections provide opportunities for more individual expression by the student, for a closer teacher-student relationship, for additional testing of students, and for more written material to be presented by them.

First-year courses are designed to introduce students to basic legal skills, foundational subject matters, and the variety of public and private processes with which the profession is concerned. Entering students are introduced to the judicial dispute-settlement process through the Foundations of Law Study Course. It is offered during three days preceding the beginning of instruction in the other required courses. First-year course and seminar descriptions will be found in *General Catalog Vol. II, Description of Courses*.

First Year

AUTUMN QUARTER	CREDITS
— Foundations of Law Study	—
400 Contracts	3
410 Civil Procedure	3
416 Legal Research and Analysis	2
430 Property I	3
440 Torts	4

WINTER QUARTER

400 Contracts	2
410 Civil Procedure	3
416 Legal Research and Analysis	3
430 Property I	3
440 Torts	4

SPRING QUARTER

400 Contracts	3
416 Legal Research and Analysis	1
420 Criminal Law	5
430 Property I	2
500 Administrative Law IV A	4

Second- and Third-Year Elective Program

The elective system in the second and third years makes it possible for a student to choose a program design that best suits his interests and meets his needs. To make this choice meaningful, a considerable range of alternatives is available, crossing the full spectrum of taught law. Additional diversity is made possible by offering several courses in multiple sections, some for different credits and at different times of the year. In addition,



independent study or research (Law 600) is available to interested students. With the approval of the Dean, students may pursue an extra School of Law program involving as much as 15 credits in other disciplines in the University, and have such credit applied to satisfaction of School of Law requirements.

To assist students in planning programs that meet their own interests and at the same time expose them to a representative range of subject matters, counseling is freely available at the School. (Course and seminar descriptions will be found in *General Catalog Vol. II, Description of Courses*.)

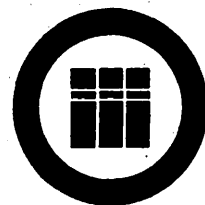
Seminar Program

The School's seminar program is built upon the belief that an opportunity for sustained research, analysis, and writing at an advanced level is an important part of one's preparation for the contemporary legal profession. Such an opportunity makes possible development of student skills in marshalling relevant authorities, critical evaluation of authorities, fitting analyses into existing doctrinal patterns, drawing on relevant knowledge from other disciplines, relating doctrinal analyses to what in

fact happens in society, generating insight into how existing problems ought to be resolved, and conveying the results of investigation and research in a meaningful and concise manner.

Each student is required to complete 6 quarter credits of seminar work before graduation. The typical seminar carries 6 credits, spans the student's entire third year, and carries an enrollment of from four to eight students.

Seminars	CREDITS
613 Corporate Planning and Counseling	6
614 Criminal Procedure	6
615 Indian Legal Problems	6
616 Federal Court	6
617 Federal Tax Policy	6
622 Consumer Protection	6
623 Natural Resources	6
624 Ocean Resources	6
625 Political and Civil Rights in the United States	6
627 Selected Problems on Environmental Protection	6
628 Problems in Urban Government and Finance	6
631 Human Ecology	6
633 Donative Transmission of Wealth	6
635 International Legal Order	6
637 The Mentally Disabled and the Law	6
638 Estate Planning	6



LIBRARIANSHIP

Director

Irving Lieberman
133 Suzzallo Library

Associate Director

Mae Benne (acting)
133 Suzzallo Library

Graduate Program Adviser

Irving Lieberman
133 Suzzallo Library

Professors

Eleanor E. Ahlers, Harry C. Bauer (emeritus), L. Dorothy Bevis (emeritus), Marian G. Gallagher (Professor of Law, Law Librarian), Irving Lieberman, Marion A. Milczewski

Associate Professors

Mae Benne, Benjamin F. Page, Spencer G. Shaw, Mabel A. Turner (emeritus)

Assistant Professors

Edmond Mignon, Jerold A. Nelson, Grant T. Skelley, Richard D. Smith, Mary Ellen Soper

Established in 1911 in response to the need for professionally qualified librarians, the School of Librarianship is one of over fifty schools offering programs accredited by the American Library Association. Programs offered lead to the degrees of Master of Librarianship and

Master of Law Librarianship and are designed to prepare students for professional programs in many types of libraries, depending on undergraduate preparation and discovery of the fields.

The basic professional curriculum, including the prerequisite courses, is organized around a group of studies designed to provide a sound foundation in principles and methods, and is required of all students pursuing a graduate degree in librarianship. In addition, the student elects courses that will prepare him for a special field of library service such as that designed for children and young people, school libraries, health sciences librarianship, information science, archival management, and law librarianship. Other programs may be designed in accordance with individual needs of the student that might include his choice of type of library and his undergraduate subject major—art, economics, music, political science, sociology, the natural and physical sciences.

Librarianship is a nonthesis program, but a thesis is not precluded if a student wishes to engage in special investigation or research in a cognate field.

Admission

The approval of both the Graduate School and the School of Librarianship is necessary for admission to



the graduate program. Students enter the School summer or autumn quarter only. The Faculty Admissions Committee begins to examine applications in autumn for entrance to the School in the following summer and autumn. Early application is advisable.

Students from countries where English is a foreign language require at least two years to complete the program and may enter only in the Autumn Quarter. To assure consideration of an application, it is advisable for foreign students to submit complete credentials by February 1. Later applications may not be processed if space or facilities are not available.

Enrollment as a graduate student is permissible while completing the four prerequisite courses. These courses do not carry graduate credit but are required before the student begins graduate-level courses in Librarianship. These are: Librarianship 440 (Libraries and Society), 441 (Basic Library Materials), 442 (Book Selection), and 443 (Organization of Library Materials: Theory and Practice). Librarianship 441, 442, and 443 must be completed simultaneously or in sequence.

The four prerequisite courses carry 3 quarter credits each, for a total of 12 credits. The courses are designed to form a basic foundation for graduate work to follow and also to serve as terminal library courses for students not seeking the graduate library degree.

Librarianship courses offered by other colleges and universities accredited by the Northwest Association of Secondary and Higher Schools may be articulated with the graduate program of the School of Librarianship. A student admitted from another accredited institution may be granted up to 12 quarter credits for courses completed, *without a reduction in the required 45 quarter credits for the Master of Librarianship degree.*

The entrance requirement of a modern foreign language (foreign students may not use their national language or English) may be met either by submitting *one academic year*, at the college level, of a modern foreign language, or its equivalent through placement beyond one year, or by passing the Graduate School Foreign Language Examination. Any language deficiency *must* be removed *prior* to enrollment.

It is strongly recommended that the applicant submit results of a recent GRE Aptitude Test (verbal and quantitative). Such a score will be required, beginning with applicants for the 1973 Summer Quarter.

Course Requirements

It is required of those enrolled in the Master of Librarianship program that 45 quarter credits of graduate course work be completed in addition to the 12 quarter credits of prerequisites. Students planning a full-time program should seek admission to begin prerequisites in the Summer Quarter. An additional four quarters of graduate work is generally required for the degree.

Required courses to be completed include Librarianship 502 or 454, 515, 516, 535, and 599 though not in that order. Other courses may be required depending on the area of specialization.

Summer Program

The full program for the Master of Librarianship degree is available to Summer Quarter students. The prerequisite courses, as well as both required and elective courses in the graduate program, are offered every summer. Course offerings vary from year to year, but are planned to enable students to complete requirements for the degree by attendance during summers only.

Law Librarianship

An applicant for entrance to the Law Librarianship program must hold a degree from an accredited American law school or from a law school in one of the other common law countries. Since specialized Law Librarianship courses are not offered in the Summer Quarter, the Master of Law Librarianship degree must be completed in the consecutive quarters of the regular academic year. Prerequisite courses are, however, offered in the Summer Quarter.

Library Facilities

The School of Librarianship is in the south wing of the Henry Suzzallo Library. The professional materials of librarianship, including an outstanding collection of children's books and a high school library collection, are a part of the Henry Suzzallo Library. These materials are supplemented by the Library's central, undergraduate, and departmental research libraries containing more than 1,800,000 volumes. In addition, the School of Librarianship has the William E. Henry collection of rare books. Students have access to the facilities of the Pacific Northwest Bibliographic Center and the University's Audio-Visual Services. The Seattle Public Library and the King County library system are also available for student use.



PUBLIC AFFAIRS

Dean

Brewster C. Denny
266 Smith Hall

Graduate Program Advisory Office
253 Smith Hall

Faculty (Including Cooperating Faculty)

William Andersen, Kathleen Archibald, Abraham B. Bergman, Robert L. Bish, Gardner Brown, James A. Crutchfield, Jr., Brewster C. Denny, Barney Dowdle, Mary L. Eysenbach, Ralph Johnson, Herbert M. Kagi, Morton Kroll, Fremont Lyden, Marion E. Marts, Kenneth M. McCaffree, Ernest G. Miller, Robert H. Pealy, William Richardson, George A. Shipman, Edward Wenk, Jr., Walter Williams, Dael M. Wolfe

The Graduate School of Public Affairs is a graduate professional school providing education and research for the public service. The School offers a program of studies leading to the degree of Master of Public Administration, designed to prepare the student for service as a professional administrator in the public service at all levels—local, state, national, and international.

Graduates serve in such varied positions as foreign service officers, city managers, and budget analysts. The School draws upon those disciplines of the University which contribute to professional education and research in the field, and thus the faculty includes participating members from these disciplines. The School also coop-

erates with a number of University departments in doctoral programs having a significant public policy or public administration content.

Master of Public Administration

The School offers a program leading to the degree of Master of Public Administration. Admission to this program requires formal admission to the Graduate School as well as acceptance by the Graduate School of Public Affairs. There is no formal requirement for specific undergraduate courses or majors. The School invites applications from students of such varied backgrounds as political science, economics, business administration, history, social work, engineering, public health, and other fields in the social and physical sciences to undertake a program leading to professional public service. The student will ordinarily need a background in the social sciences, in the nature and historical background of American institutions, basic preparation in general economics and statistics, and a mature capacity to digest reading and to express himself in clear and lucid English. The student who lacks sufficient background in these areas may be required to make up these deficiencies by taking or auditing appropriate courses in addition to the course requirements for the degree. Ordinarily, the degree of Master of Public Administration is awarded upon the successful completion of two years of course work (60 quarter credits), a summer intern-



ship, a degree project, and a comprehensive examination. This is a nonthesis program. There is no formal language requirement.

Students may select their field of emphasis from two general concentrations: Public Administration, for students primarily interested in general administrative or managerial positions in the public service, and Public Policy, for students preparing for government positions which require professional preparation in one or more particular areas of public policy such as foreign affairs, science and public policy, health policy, natural resources, urban affairs, and the like. The student, with the approval of the Graduate Program Adviser, selects courses from among those offered by the School and by other departments of the University. Central to the program are courses offered by numerous other schools and colleges throughout the University, and courses taught by cooperating and participating faculty serve as an integral part of the School's curriculum.

In addition to the basic course work and the summer internship, the student has the opportunity to participate in the General Seminar at which distinguished public servants appear, in workshops and conferences sponsored by the Graduate School of Public Affairs, and in the activities of the Institute for Administrative Research. An important feature of the program of the School is the sponsorship of the Public Policy Seminars. These are faculty seminars in which professors from several colleges, schools, and departments of the University and distinguished experts from off-campus discuss a particular problem area of public policy. Students participate as auditors at the invitation of faculty members. Interdisciplinary seminars in natural resources, urban and regional public policy, and health care are already regular features of the program. Others are in the planning stages for future years.

Mid-Career Education

A substantial number of students in the School are public servants with several years of public service who, on a part-time or full-time basis, take graduate work at mid-career to prepare themselves for new and broader policy and administrative responsibilities. The University is one of eight universities participating in the Education for Public Management program sponsored by the U.S. Civil Service Commission. Under this program approximately twelve federal and state officials enroll each year in the Graduate School of Public

Affairs for a special mid-career educational program with emphasis on the administration of public policy.

Institute of Governmental Research

The Institute of Governmental Research, as a major research unit of the University, performs a variety of roles concerned with problems of public policy and administration in the state of Washington and the Pacific Northwest region. In the performance of these roles, a primary mission of the Institute is to work with other organizations of the University in bringing the highest standards and criteria of various disciplines to the solution of public problems.

Institute policies are developed through advisory committees composed of representatives of University schools and departments that wish to participate in efforts to formulate solutions to public policy issues. Further, the Institute receives policy advice from committees composed of public officials and civic leaders. Thus, the Institute is University-wide in its activities and interests, and is an important link between the University and the world of public affairs.

The rapid urbanization of the state of Washington has created new problems and intensified old ones for the state government and its local governments, as well as for federal and regional agencies. Consequently, in the activities of the Institute staff and its relationships within the University, with public officials, and with citizen organizations, major program emphasis is on problems of urban public policy and administration. The Institute develops and administers programs to increase opportunities for cooperative interdisciplinary research by faculty and graduate students on pressing problems of urban society that have lasting research significance and that contribute to the solution of those problems.

The Institute is administered on behalf of the University by the Dean of the Graduate School of Public Affairs as executive agent. The Institute, with a substantial broadening in mission and an expansion of University research and service in urban affairs, is the successor organization to the Bureau of Governmental Research and Services.

Further Information

For further information and a detailed publication on this program, write to the University of Washington, Graduate Program Adviser, Graduate School of Public Affairs, 253 Smith Hall, Seattle, Washington 98195.



INTERDISCIPLINARY GRADUATE DEGREE PROGRAMS

ART HISTORY

Chairman of Art History Group and Graduate Program Adviser
Millard B. Rogers
131 Art Building

Professors

Constantine G. Christofides (Romance Languages),
Friedrich G. Grossmann (Art)

Associate Professors

Colin N. Edmonson (Classics), Paul Pascal (Classics),
Hermann G. Pundt (Architecture), Millard B. Rogers
(Art), Glenn T. Webb (Art)

Assistant Professors

René Bravmann (Art), Martha Kingsbury (Art), Hal N.
Opperman (Art)

Cooperating Faculty

B. Holm (Art), T. Gervais Reed (Art), Robert Wilson
(Art)

The graduate program in Art History leading to the Doctor of Philosophy degree is administered by an interdisciplinary Art History Group of the Graduate School. The Master of Arts degree in Art History is administered by the School of Art. (See *College of Arts and Sciences* section.)

Admission

In addition to admission into the Graduate School, students must be accepted into the program by the

faculty of the Art History Group. Those students whose backgrounds are judged insufficient by this Group may be required to satisfy deficiencies before being allowed to undertake a full-scale graduate program.

Requirements for the Degree

A minimum of 72 credits, exclusive of the dissertation, after admission to Graduate School, is required. At least 36 of these must be in courses numbered 500 and above. Every student is expected to take some work outside his major field, this work to be approved by his Supervisory Committee. Of the 36 credits above 500, a maximum of 15 may be taken outside the field of Art History.

Language

A reading knowledge of two foreign languages is required—French or German, as tested by the standard language examinations (Educational Testing Service) used by the University of Washington, and one language for which there will be special requirements. Students in certain fields may be asked to demonstrate to their advisory committees that they have a working knowledge of more than these two languages. The ETS examinations may be written and passed by undergraduates who are urged to establish their foreign language competence before they enter the Graduate School.



Residency and Registration

Students must present a minimum of three academic years of resident study, two of them at the University of Washington, with at least one year in continuous full-time residence. (The continuous year may be satisfied with three out of four consecutive full-time quarters.)

Admission to Candidacy and General Examination

At the end of two years of course work and after a successful demonstration of proficiency in French or German, students will be permitted to take the General Examinations. These examinations will cover three fields of Art History chosen from the following general areas: (1) South Asia and Southeast Asia, (2) Eastern Asia, (3) Primitive and Tribal, (4) Ancient, (5) Medieval, (6) Renaissance, (7) Baroque, (8) Modern.

No more than two fields may be selected from the same area. Topics will be defined in writing to each graduate student in accordance with the student's specific interest and the University's resources. For example, in the ancient area a student might elect Greek and Roman art as two of his specific fields, the third would have to be selected from another area. Or, a student might select nineteenth-century European art and contemporary American art as two fields within the modern area, but his third field would have to be selected from some area other than modern.

Dissertation

Each student must prepare and have accepted by the Art History Group, a dissertation that is an original and significant contribution to knowledge. Credit for the dissertation ordinarily should be at least one-third of the total credit for the degree. Since original works of art constitute primary sources in art historical investigation, the student will be expected to have a first-hand knowledge of the relevant monuments with which his dissertation is concerned. This may necessitate registration *in absentia* for one or more quarters.

Final Examination

The Final Examination will be oral, and will cover the subject of the dissertation and the student's research.

Financial Assistance

The graduate Art History Program offers the Samuel H. Kress Foundation Fellowship of \$3,000 each year to a student who is pursuing a program in the history of art. Limited funds are available for the assistance of graduate students in the history of art, and there are certain teaching assistantships for which students may apply.

Japan Regional Studies

This course of study combines language instruction with area training. It is designed for the student with a Bachelor of Arts degree in a discipline (1) as a terminal degree in preparation for careers in government, journalism, business, or teaching, and (2) as a transitional degree for a Ph.D. degree program in a discipline. Students with a B.A. degree in Japanese language and area studies or the equivalent are encouraged to pursue programs leading to the M.A. or Ph.D. degree in a discipline department and to concentrate much of their work on Japan.

Course Requirements

Language training is an essential component of the program. All students are required to complete Japanese language training through at least the fourth year of instruction (60 credits).

Interdisciplinary study is another essential component of the program. All students are required to take EASIA 555, Introduction to Modern Japanese Studies (5 credits) in their first year. This course is designed to provide a systematic introduction to the interdisciplinary approach in the study of modern Japan. All students are required in the second year to take EASIA 559, Interdisciplinary Seminar on Japan (5 credits). This course is designed for interdisciplinary, problem, or topic-oriented research.

Course work in the disciplines is the third essential component of the program. Students are expected to enroll in discipline courses totaling 25 credits, at least 8 of which must be at the 500 level or above.

Other Requirements

Students must submit an essay of distinction. The essay, which will normally build on work done in EASIA 559, must be read and approved by at least two faculty members. Students must also pass a comprehensive oral examination covering course work and the essay.

Korea Regional Studies

This course of study combines language instruction with area training. It is designed for the student with a Bachelor of Arts degree in a discipline (1) as a terminal degree in preparation for careers in government, journalism, business, or teaching, and (2) as a transitional degree for a Ph.D. degree program in a discipline.

Course Requirements

Language training is an essential component of the program. All students are required to complete Korean language training through at least the second year of instruction (30 credits), or Korean 313 or its equivalent.

lent. Students with language background will, on admission, normally be expected to continue to enroll in Korean language courses.

All students are required to take HSTAS 469, 470, History of Korea, and one graduate seminar in Korean history, either HSTAS 566, Research Seminar in Modern Korea, or HSTAS 572-573, Seminar in Korean History. Students are expected to enroll in discipline courses totaling at least 36 credits, of which 18 or more must be at the 500 level or above.

Students preparing for further work in a Ph.D. program should also consider taking additional language instruction in Japanese or Chinese and courses in Japanese or Chinese history, politics, and other social sciences.

Other Requirements

Students must submit an essay of distinction. The essay which may be an extension of a seminar paper must be read and approved by at least two faculty members. Students must also pass a comprehensive oral examination covering course work and the essay.

BIOLOGY TEACHING

Chairman of Biology Teaching Group and
Graduate Program Adviser

Ingrith Deyrup-Olsen
328 Kincaid Hall

Associate Chairman of Biology Teaching Group

Donald S. Farner
106 Kincaid Hall

Professors

Ingrith Deyrup-Olsen (Zoology), H. C. Douglas (Microbiology), Donald S. Farner (Zoology), M. P. Gordon (Biochemistry), A. J. Kohn (Zoology), B. J. D. Meeuse (Botany), Roger G. Olstad (Education), G. J. Paulik (Fisheries)

Associate Professors

E. W. Nester (Microbiology), R. F. Stettler (Forest Resources)

Assistant Professor

W. Halperin (Botany)

The University of Washington offers an interdisciplinary program leading to the degree of Master of Arts for Teachers in the field of Biology. This program is designed for biology teachers in secondary schools and community colleges. Emphasis is on broadening the student's understanding of the various fields of biological science, and on providing opportunities for independent study, with the primary goal of improving the student's effectiveness as a teacher.

The program offers training in the major areas of biology and in advanced courses and seminars in science teaching methods and curriculum design. Each student is asked to perform a study, in depth, of a biological problem in the context of its relevance to the teaching of biological science. Guidance in this work will be provided by a sponsoring professor and advisory committee drawn from the range of departments and colleges concerned with biological science and with education throughout the University of Washington.

Admission to the program may be granted to teachers with provisional or permanent certification, who meet the requirements of the Graduate School as outlined in the *Graduate Study* section of this catalog.

Specific requirements for the M.A.T. degree in the field of biology include a minimum of 36 credits in course work distributed as follows: 27-30 credits in courses in biological science and science education, including at least one course in each of the fields of biochemistry, botany, genetics, microbiology, and zoology. A minimum of 9 to 12 of these credits must be at or above the 500 level. In project work, 6-9 credits are required which may take the form of a laboratory, field, library, or classroom study.

Award of the degree will be recommended on successful completion of a written report on the project work and on passage of a general examination in the fields of the candidate's specific interests and course work.

Further information about the program may be obtained from the Graduate Program Adviser.

BIOMATHEMATICS

Chairman of Biomathematics Group and Graduate Program Adviser
Edward B. Perrin

F361 Health Sciences Building

Professors

Z. William Birnbaum (Mathematics), Arthur C. Brown (Physiology and Biophysics), Douglas G. Chapman (Fisheries, Forest Resources, and Mathematics), Robert T. Paine (Zoology), Gerald J. Paulik (Fisheries), Edward B. Perrin (Biostatistics), Ronald Pyke (Mathematics), Brian J. Rothschild (Fisheries), Donovan J. Thompson (Biostatistics), Allan C. Young (Physiology and Biophysics)

Associate Professors

Norman Breslow (Biostatistics), Polly Feigl (Biostatistics), Lloyd D. Fisher (Mathematics and Biostatistics), William H. Hathaway (Forest Resources), Richard A. Kronmal (Biostatistics), Kenneth J. Turnbull (Forest Resources)



Assistant Professors

Joseph Felsenstein (Genetics), James C. Kelley (Oceanography), Galen R. Shorack (Mathematics)

Biology and medicine are currently undergoing revolutionary advances in their development as quantitative sciences. Technological advances find expression in new research tools. New theoretical concepts are being employed in the analysis of quantitative data. The techniques and viewpoints of mathematics and statistics, traditionally peripheral to biology and medicine, are being woven into the fabric of the life sciences. The recent emergence and rapid growth of interest in mathematical biology provide exciting new opportunities in research and teaching.

The University of Washington, through the Biomathematics Group of the Graduate School, has established a program leading to degrees of Master of Science and Doctor of Philosophy. In this program, students develop competence in mathematical statistics and in applying mathematics and statistics to a biological field of their choice.

Admission

Students may enter the program from undergraduate majors in mathematics or statistics or any biological field. In particular, students should have 30 quarter credits in mathematics and statistics (beyond college algebra) and 15 quarter credits in basic biology or 30 quarter credits in a biological field and 15 quarter credits in calculus although deficiencies may be made up while in the program.

PROGRAMS OF STUDY

Although the primary program, with prescribed course requirements listed below, is in biostatistics, students who wish to develop other mathematical tools, e.g., from differential and integral equations, numerical analysis, etc., to apply to biological problems are welcome to the program. For such students individual programs can be arranged as indicated below.

I. Biostatistics

(a) Master of Science

COURSES	CREDITS
MATH 394, 395 Probability (3,3)	6
MATH 482, 483 Statistical Inference (3,3)	6
MATH 484 Distribution-Free Inference (3)	3
MATH 485 Analysis of Variance (3)	3
PC BS 511, 512, 513 Medical Biometry I, II, III (3,3,3)	9

Approved electives: 6-10 credits depending on the student's background.

(b) Doctor of Philosophy

COURSES	CREDITS
MATH 394, 395, 482, 483, 484, and 485 (as listed above)	18
MATH 424, 425, 426 Fundamental Concepts of Analysis	9
MATH 581, 582, 583 Advanced Theory of Statistical Inference	9
PC BS 571, 572, 573 Special Topics in Biostatistics	9

Approved electives: At least 15 credits, the selection depending on the student's background in biology and mathematics. In any case, one sequence should be in a biological area.

All students are required to register for Mathematics 590, Seminar in Probability and Statistics, or Biostatistics 580, Seminar in Biostatistics, for 1 credit per quarter for at least 9 credits.

II. Other Degree Programs in Biomathematics

Individual programs in biomathematics can be worked out leading to the M.S. or Ph.D. degrees. Such programs, for example, may be designed to establish strength in numerical analysis and/or model building and to apply this in biophysics and physiology or in quantitative ecology.

In place of the courses in mathematical statistics and biostatistics, students interested in this option for a Ph.D. degree should take Mathematics 424, 425, 426 and select 30 credits from the following options.

COURSES	CREDITS
MATH 394, 395, 396 Probability (3,3,3)	9
MATH 407, 408 Mathematical Optimization Theory (3,3)	6
MATH 427, 428, 429 Topics in Applied Analysis I, II, III (3,3,3)	9
MATH 464, 465, 466 Numerical Analysis I, II, III (3,3,3)	9
MATH 491, 492 Stochastic Processes (3,3)	6
MATH 521, 522, 523 Probability (3,3,3)	9
MATH 541, 542, 543 Special Topics in Applied Mathematics (3,3,3)	9
MATH 591, 592, 593 Special Topics in Statistics (3,3,3)	9

At least one of the sequences in mathematics should be at the 500 level. In addition, students would select approved electives for at least 21 credits in biophysics and physiology or from the courses Fisheries 556, 557, 558; Biology 472; and Zoology 572, 574, 578.

Some courses in simulation or operations and systems analysis in the Graduate School of Business Administration could be substituted for the undergraduate mathematics courses.

Further Requirements

A thesis is required for the Master of Science degree. Demonstration of proficiency in one foreign language and a dissertation are required for the Doctor of Philosophy degree.

At the completion of approximately two years of course work, the student working for a Ph.D. will take General Examinations (written and oral). For those in the biostatistics option there will be written examinations in theoretical statistics and biostatistics and an examination in a biological field to test the student's ability to integrate mathematical methods with his field of application. Similar types of examinations will be required

of those in the program's other options. At the successful completion of these examinations, the student is advanced to candidacy.

While most of the Candidate's time, after completion of the Ph.D. General Examination, is devoted to his dissertation research program, he is expected to devote part of his time to consultation to gain greater facility in using mathematical and statistical tools in interdisciplinary problems. Formal credit can be given for this through courses numbered 600 (Independent Study or Research) in the appropriate department, or through Biostatistics 590 in the School of Public Health and Community Medicine. Such consultation is an essential part of the training of a biostatistics student, in particular.

COMPARATIVE LITERATURE

Chairman of Comparative Literature Group

Frank J. Warnke

B436 Padelford Hall

Associate Chairman

Ernst Behler

D338 Denny Hall

Graduate Program Adviser

Frank W. Jones

A202 Padelford Hall

Professors

Sverre Arestad (Scandinavian Languages and Literature), Ernst H. Behler (Germanic Languages and Literature), Constantine Christofides (Romance Languages and Literature), Jack Haney (Slavic Languages and Literature), Karl-Ivar Hildeman (Scandinavian Languages and Literature), Antonin Hruby (Germanic Languages and Literature), Walter Johnson (Scandinavian Languages and Literature), Frank W. Jones (English and Comparative Literature), Edith Kern (Romance Languages and Literature), Wolfgang Leiner (Romance Languages and Literature), John B. McDiarmid (Classics), Richard McKinnon (Asian Languages and Literature), William H. Rey (Germanic Languages and Literature), Robert D. Stevick (English), Frank J. Warnke (English), Turrell V. Wylie (Asian Languages and Literature), Farhat J. Ziadeh (Near Eastern Languages and Literature)

Associate Professors

Gerhard Baumgaertel (Germanic Languages and Literature), Robert Ellrich (Romance Languages and Literature), Edwin M. Gerow (Asian Languages and Literature), William C. Grummel (Classics), Pierre Mac-

kay (Classics), Otto Reinert (English), William Willeford (English)

Assistant Professors

Frank J. Kearful (English), Willis A. Konick (Slavic Languages and Literature), Michael Loraine (Classics), David Thompson (Romance Languages and Literature)

The graduate program in Comparative Literature leading to the Master of Arts and Doctor of Philosophy degrees, is administered by an interdisciplinary Comparative Literature Group of the Graduate School.

The comparative study of literature concerns itself with literature in its essential nature, not as restricted to one specific national culture or language. Typical areas of inquiry for the Comparative Literature scholar include literary traditions prevailing for long periods of time in large cultural areas, major genres and forms as they are manifested in different linguistic and cultural environments, patterns of influence and reception of literary works among various national cultures, and the general principles of literary theory and criticism.

On receiving the Master of Arts or the Doctor of Philosophy degree, the graduates are qualified for teaching and research in comparative and world literature and the history of literary genres, as well as the language and literature of their specialization.

Graduate study in Comparative Literature involves intensive work in two or more national literatures, read in their original tongues. To qualify for study toward the M.A., the student must demonstrate, at the beginning of his study, advanced competence in one foreign language; within a year of his beginning residence, he must show a basic reading knowledge of a second foreign language. For Ph.D. work, the student must be equipped with advanced competence in two foreign languages and a basic reading knowledge of a third. In some cases a program involving the study of relations between literature and some related field, e.g., philosophy, psychology, is approved by the Comparative Literature faculty.

During their period of study, students working for advanced degrees in Comparative Literature are eligible for teaching assistantships in the language of their major literature; namely, Asian, Classics, English, Germanic, Near Eastern, Romance, Scandinavian, or Slavic.

All requests for information regarding the Comparative Literature program should be addressed to the Graduate Program Adviser, Comparative Literature, Room 238 Kincaid Hall.



COMPARATIVE PHYSIOLOGY

Chairman of Comparative Physiology Group

A. O. D. Willows
138 Kincaid Hall

Associate Chairman

C. F. Stevens
G408 Health Sciences

Graduate Program Adviser

John Palka
238 Kincaid

Professors

A. C. Brown (Physiology and Biophysics), John S. Edwards (Zoology), Donald S. Farner (Zoology), Aubrey Gorbman (Zoology), T. F. Hornbein (Medicine and Physiology and Biophysics), Kjell Johansen (Zoology), C. J. Lenfant (Medicine and Physiology and Biophysics), Arthur W. Martin (Zoology), Ingrith Olsen (Zoology), Harry D. Patton (Physiology and Biophysics), A. M. Scher (Physiology and Biophysics), Arnold L. Towe (Physiology and Biophysics), C. A. Wiederhielm (Physiology and Biophysics), J. Walter Woodbury (Physiology and Biophysics), A. C. Young (Physiology and Biophysics)

Associate Professors

J. T. Conrad (Physiology and Biophysics), C. G. Gale (Physiology and Biophysics), A. M. Gordon (Physiology and Biophysics), C. F. Stevens (Physiology and Biophysics)

Assistant Professors

John Palka (Zoology), C. E. Stirling (Physiology and Biophysics), Dennis A. O. Willows (Zoology)

The University of Washington offers an interdisciplinary program leading to the Master of Science and Doctor of Philosophy degrees in the field of Comparative Physiology. The program is offered by the Comparative Physiology Group of the Graduate School; its faculty comprises certain members of the departments of Physiology and Biophysics and of Zoology. These departments contribute space and resources to the program.

The program aims at combining a broad training in animal morphology (from gross anatomy to ultrastructure) with advanced training in biophysics and, where necessary, biochemistry and physical chemistry in order to encourage the utilization of the whole spectrum of organisms, from protozoans to man, in advanced physiological research and teaching. In this way the program attempts to join the resources available in mammalian physiology with those in invertebrate physiology. The program is designed to accommodate graduate students

of various backgrounds, including graduates in biology, zoology, physics, mathematics, chemistry, and biochemistry.

Support is available in the form of teaching and research assistantships.

Students who wish to enter the program in Comparative Physiology must meet the requirements of the Graduate School as outlined in the *Graduate Study* section of this catalog.

Minimum prerequisites for entering the program are 10 credits in general zoology or general biology, or any combination of introductory courses in zoology, botany, and genetics; 12 credits in general physics; 15 credits in chemistry (including general chemistry and organic chemistry), and a minimum of 15 credits in mathematics (including calculus).

Requests for further information should be addressed to the Graduate Program Adviser or the Group Chairman.

COMPUTER SCIENCE

Chairman of Computer Science Group

Jerre D. Noe
222 Roberts Hall

Graduate Program Adviser

David B. Dekker
222 Roberts Hall

Professors

Hellmut Golde (Electrical Engineering), Allan A. Goldstein (Mathematics), Earl B. Hunt (Psychology), David L. Johnson (Electrical Engineering), Victor Klee (Mathematics), Laurel J. Lewis (Electrical Engineering), Jerre D. Noe (Computer Science), Ronald Pyke (Mathematics), Robert W. Ritchie (Computer Science)

Associate Professors

John G. Cramer (Physics), David B. Dekker (Mathematics), Alistair D. C. Holden (Electrical Engineering), Theodore H. Kehl (Physiology and Biophysics), Ralph T. Rockafellar (Mathematics), Alan C. Shaw (Computer Science)

Assistant Professors

Jean-Loup E. Baer (Computer Science), George E. Diehr (Business Administration), Robert G. Herriot (Computer Science), Richard Eladner (Computer Science), Jonathan Stanfield (School of Librarianship)

Lecturer

Robert Gillespie (Computer Center)

The field of computer science recently has emerged as a separate discipline, evolving from such disciplines as mathematics and engineering, which gave computer science much of its early impetus. The use and utility

of electronic digital computers is well established and well known; no further elaboration is necessary. Nevertheless, computer science is much more than the design and programming of computers for their use in certain tasks: it involves the general concept of information and studies the transformation of information in much the same sense as physics studies the transformation of energy.

Computer science is devoted to the representation, storage, manipulation, and presentation of information in an environment permitting automatic information systems. The computer scientist is interested in discovering the means by which information can be transformed in order to model and to analyze the information transformations in the real world. This interest leads to inquiry into both the theory and the application of (1) effective ways to represent information of all forms, (2) effective algorithms to transform information, (3) effective languages with which to express algorithms, (4) effective means to monitor the process and display the transformed information, and (5) economic ways to accomplish (1) and (4).

Both mathematics and engineering have contributed greatly to the development of electronic computing and information transformation devices, the former principally through the development of computational algorithms (largely in numerical analysis) and the theories of computability, recursive functions, and automata, and the latter primarily through the design of computing devices and the development of the theory of digital circuits. In recent years many other disciplines have taken a very active interest in computer science and have contributed greatly to the development of this discipline. Linguistics plays an increasing role in the development of computer languages and the problem of machine translation of natural languages; librarianship, or library science, is vitally interested in the efficient storage and retrieval of information; business administration has a stake in the processing and the modeling and simulation of complex systems and in the display of business information; psychology is contributing greatly to the development of learning or self-improving automata; biology and medicine provide a substantial amount of background for the modeling of human and animal information processing. This brief list mentions only the principal contributors to the field of computer science; the use of computing machines has, of course, invaded practically all fields.

Computer Science includes research in many areas, including: theory and design of digital computers, theory and development of computer languages and their processors, automata theory, artificial intelligence,

numerical analysis, information display systems, systems simulation and operations research, command and control systems, and real time and on-line information processing.

The Computer Science Laboratory equipped with a Xerox Data Systems Sigma 5 computer is operated by the Computer Science Group for research and teaching in Computer Science.

The Computer Science Group offers programs leading to the degrees of Master of Science and Doctor of Philosophy.

Admission

To be admitted to the graduate program in computer science, a student must satisfy the admissions criteria outlined in the *Graduate Study* section of this catalog. In addition, the student must make an application to the Computer Science Group, showing that his background includes:

- (1) Basic knowledge of programming with a procedure-oriented language, e.g., FORTRAN, ALGOL, COBOL, including the development of programming algorithms.
- (2) Basic knowledge of computer organization and arithmetic and assembly language programming, e.g., FAP, MAP, Autocoder.
- (3) Mathematics through differential and integral calculus, elementary differential equations, algebra of matrices, introductory modern algebra, and fundamentals of mathematical logic. Knowledge of numerical analysis is desirable but not required.

A student with subject area deficiencies may occasionally be admitted. Courses taken to remove such deficiencies will not be counted toward any degree requirement.

Admission to the computer science program may be restricted because of limited facilities. Applications for admission to the program should be submitted by these deadlines (earlier than the University-published dates):

Application for Autumn Quarter, February 1; application for Winter Quarter, October 1; application for Spring Quarter, January 1. Applications by foreign students may be made only for Autumn Quarter and must be submitted by January 1.

Applicants requesting financial aid in the form of scholarships or assistantships will be considered only for Autumn Quarter admission, and applications for financial aid must be filed by February 1.

Computer science and financial-aid application forms may be obtained directly from the Computer Science



Group, University of Washington, Seattle, Washington 98195.

PROGRAMS OF STUDY

Master of Science

Two options leading to the Master of Science degree are offered. Individual programs should be designed to provide considerable breadth of knowledge as well as depth in some area of specialization. In addition to the degree requirements outlined in the *Graduate Study* section of this catalog, the student must satisfy several requirements:

Nonthesis option

1. Completion of 40 credits of course work. At least one-half of the credits must be in courses numbered 500 or above.
2. At least 30 credits must be in courses chosen from the Computer Science course list.
3. The remaining course work should be in one or more supporting fields, e.g., engineering, mathematics, natural sciences, business administration, linguistics, philosophy, psychology, or medicine.
4. Passing satisfactorily an oral examination in one area of specialization.

Thesis option

1. Completion of 31 credits of course work. At least one-half of the credits must be in courses numbered 500 or above.
2. At least 24 credits of course work must be in courses chosen from the Computer Science course list.
3. See item 3 under nonthesis option.
4. Preparation of a thesis acceptable to a Computer Science supervisory committee. Students must register for at least 9 credits of Computer Science 700, Master's Thesis, in addition to the 31 credits of course work.
5. Pass an oral examination on thesis work.

Examples of programs providing appropriate depth are:

1. A program in programming languages and systems: Computer Science 478, 501, 502, 510, 531; Mathematics 405, 519.
2. A program in design of computers: Computer Science 478, 501, 531; Electrical Engineering 576, 588, 589; Mathematics 405.
3. A program in abstract theory for students with a strong algebra background: Computer Science 478, 501, 531; Mathematics 405, 504, 505, 506.
4. A program in numerical analysis: Computer Science 478, 501; Mathematics 464, 465, 466, and/or 557, 558, 559.

Doctor of Philosophy

Individual Ph.D. programs must be approved by the Supervisory Committee, appointed by the Dean of the Graduate School. Requirements that supplement those outlined in the *Graduate Study* section of this catalog are as follows:

1. Passing a Ph.D. qualifying examination administered by the Computer Science Group. The examination normally is taken after completion of one year of graduate study and covers breadth of knowledge in Computer Science, which can be obtained from the basic Computer Science courses. A detailed prospectus will be issued well in advance of the examination.
2. Demonstrating proficiency in a foreign language, (usually French, German, or Russian).
3. Passing the General Examination specified in the *Graduate Study* section of this catalog. In this examination the student must demonstrate depth of knowledge in the area of programming languages and in one of a number of special areas acceptable to his Ph.D. Supervisory Committee. Examples of such areas are numerical analysis; computer design; and theoretical foundations of computer science (includes automata theory, mathematical logic, and modern algebra).
4. Completing approximately 60 credits of course work, at least 40 of which are to be in courses numbered 500 or above, and approximately 45 credits should be in courses chosen from the Computer Science course list.

Course work taken for the M.S. degree will be applicable to the Ph.D.

5. Preparation of a dissertation acceptable to the Supervisory Committee. Students must register for at least 27 credits of Computer Science 800, Doctoral Dissertation.

Computer Science Course List

Courses listed below are acceptable for application to requirements for computer science degrees. Courses may be added to or deleted from this list from time to time. Electives may be chosen from other courses in this catalog with the approval of the student's adviser.

COMPUTER SCIENCE 470	Design of Digital Data Systems
COMPUTER SCIENCE 472	Computer Software Systems
COMPUTER SCIENCE 478	Computer Organization and Machine Language Programming
COMPUTER SCIENCE 501-502	Programming Languages and Systems I, II
COMPUTER SCIENCE 508	Representation and Handling of Data Structures
COMPUTER SCIENCE 510	List Processing and String Manipulations
COMPUTER SCIENCE 519	Mathematical Linguistics
COMPUTER SCIENCE 531, 532	Automata Theory
COMPUTER SCIENCE 540	Discrete System Simulation
COMPUTER SCIENCE 541	Computer Measurements and Evaluation Techniques

COMPUTER SCIENCE 551 Operating Systems
 COMPUTER SCIENCE 552 Systems Programming Practicum
 COMPUTER SCIENCE 573, 574 Artificial Intelligence I, II
 COMPUTER SCIENCE 590 Special Topics in Computer Science
 COMPUTER SCIENCE 600 Independent Study or Research
 COMPUTER SCIENCE 700 Master's Thesis
 COMPUTER SCIENCE 800 Doctoral Dissertation
 ELECTRICAL ENGINEERING 576, 577 Information Theory and Coding I, II
 ELECTRICAL ENGINEERING 588, 589 Logical Design of Digital Computers
 ELECTRICAL ENGINEERING 590 Advanced Topics in Digital Computers
 ELECTRICAL ENGINEERING 595 Advanced Topics in Communication Theory
 LINGUISTICS 461 Syntax
 MATHEMATICS 403, 404 Introduction to Modern Algebra
 MATHEMATICS 405 Introduction to Metamathematics
 MATHEMATICS 407, 408 Mathematical Optimization Theory
 MATHEMATICS 464, 465, 466 Numerical Analysis I, II, III
 MATHEMATICS 501, 502, 503 Mathematical Logic
 MATHEMATICS 504, 505, 506 Modern Algebra
 MATHEMATICS 557, 558, 559 Special Topics in Numerical Analysis

DRAMA ARTS

Chairman of Drama Arts Group and
 Graduate Program Adviser

Gregory A. Falls
 113 Drama-TV Building

Professors

Sverre Arestad (Scandinavian), Gregory A. Falls (Drama), Walter Johnson (Scandinavian Languages and Literature), Gerald R. Kechley (Music), Martha Kingsbury (Art), Robert B. Loper (Drama), John B. McDiarmid (Classics)

Associate Professors

Frank W. Jones (English), Richard N. McKinnon (Asian Languages and Literature), Charles W. Smith (Art)

Assistant Professors

Richard Lorenzen (Drama), Norman Stokle (Romance Languages and Literature), John R. Wolcott (Drama)

The University of Washington, through the interdisciplinary Drama Arts Group of the Graduate School, comprised of faculty members from Drama, Art, Asian Languages and Literature, Classics, English, Music, Scandinavian Languages and Literature, Slavic Languages and Literature, and other disciplines, offers a program leading to the Doctor of Philosophy degree for students interested in research and scholarship.

The Ph.D. in Drama Arts is concerned with the relationship of theatre history, criticism, and the theatre arts. The first year of study concentrates on theatre history with allied studies in criticism, architecture, and art. It is expected that students entering the program will have had some theatre experience, both practical and academic. Because of the interdisciplinary faculty,

intensive study of the drama and theatre of a number of nations is possible if the student has an appropriate language competence.

One foreign language is required. The General Examination consists of a series of prepared essays in a major field and an oral examination in both a major and a minor field. After the first year, the study is primarily in tutorials and independent projects in the student's major and minor fields.

Students with a bachelor's degree may be admitted to study for the master's degree in Drama and/or through the interdisciplinary Drama Art Group.

Students must meet all the general degree requirements for the Ph.D. at the University of Washington.

EAST ASIAN STUDIES

Chairman of East Asian Studies Group

Donald C. Hellmann
 414 Thomson Hall

Graduate Program Adviser

Jack L. Dull
 405 Thomson Hall

Professors

G. M. Beckmann (Asian Studies), R. J. C. Butow (History), D. F. Henderson (Law), R. N. McKinnon (Asian Languages and Literature), R. A. Miller (Asian Languages and Literature), P. L-M Serruys (Asian Languages and Literature), W. L. Shattuck (Law), V. Y. C. Shih (Asian Languages and Literature), G. E. Taylor (Institute for Comparative and Foreign Area Studies), T. V. Wylie (Asian Languages and Literature), K. Yamamura (Institute for Comparative and Foreign Area Studies and Economics)

Associate Professors

K. Chang (Geography), S. Cheung (Economics), I. Cirtautas (Asian Languages and Literature), J. L. Dull (History), R. A. Garfias (Anthropology and Music), D. C. Hellmann (Political Science), D. L. Hsu (Asian Languages and Literature), G. H. Kakiuchi (Geography), F. Lukoff (Asian Languages and Literature), F. Mah (Economics), T. Niwa (Asian Languages and Literature), K. B. Pyle (History), D. S. Suh (Asian Languages and Literature), J. R. Townsend (Political Science), I. Yen (Asian Languages and Literature)

Assistant Professors

J. Brim (Anthropology), R. Kauffman (Music), J. B. Palais (History), T. Takaya (Asian Languages and Literature), G. T. Webb (Art)

The East Asian Studies Group, an interdisciplinary Group of the Graduate School, offers programs leading



to the Master of Arts degree. The Group, comprising faculty members from a number of disciplines cooperating within the Institute for Comparative and Foreign Area Studies, offers several East Asian regional specializations leading to the degree, and these are described later in this section.

For complete course listings and further details refer to the Institute for Comparative and Foreign Area Studies, the Department of Asian Languages and Literature, and the other cooperating departments.

Outlined below are regional Master of Arts degree specializations currently offered by the Group.

General Admission Requirements

The applicant to any of the regional specializations in the M.A. program must meet the requirements of the Graduate School as outlined in the *Graduate Study* section of this catalog. An undergraduate grade-point average of 3.00 in the junior and senior years is normally a prerequisite for admission. Submission of the scores of the Aptitude Section (Verbal and Quantitative) of the Graduate Records Examination is required.

China Regional Studies

This course of study combines language instruction with area training. It is designed for the student with a Bachelor of Arts degree in a discipline (1) as a terminal degree in preparation for careers in government, journalism, business, or teaching, and (2) as a transitional degree for a Ph.D. degree program in a discipline. Students with a B.A. degree in Chinese languages and area studies or the equivalent are encouraged to pursue programs leading to the M.A. or Ph.D. degree in a discipline department and concentrate much of their work on China.

Course Requirements

Language training is an essential component of the program. All students are required to complete Chinese language training at least through the third year of instruction (45 credits); students are encouraged to take as much instruction in Chinese as possible, including summer intensive courses.

Interdisciplinary study is another essential component of the program. All students are required to take East Asia EASIA 521-522. Seminar: Introduction to the Interdisciplinary Study of China (10 credits), in their first year. This two-quarter sequence is designed to introduce students to work done, in various disciplines, on China.

Course work in the disciplines is the third essential component of the program. Students can select from a

broad range of courses in disciplines which, at minimum, must total 26 credits in addition to East Asia 521-522. Eight of these 26 credits must be at the 500 level or above.

Other Requirements

Students have the option of submitting two seminar papers or a thesis. The requirement for the two seminar papers may be met in the East Asia 521-522 sequence and in the discipline seminar. Both papers (or the thesis which will normally build on work done in the seminar) must be read and approved by at least two faculty members. Students must also pass a comprehensive oral examination covering course work and the seminar papers (or thesis).

PHYSIOLOGY PSYCHOLOGY

Chairman of Physiology Psychology Group and
Graduate Program Adviser

Moncrieff H. Smith, Jr.
406A Denny Hall

Professors

Earl B. Hunt (Psychology), Harry D. Patton (Physiology and Biophysics), Moncrieff H. Smith, Jr. (Psychology), Orville A. Smith, Jr. (Physiology and Biophysics), Arnold L. Towe (Physiology and Biophysics)

Associate Professors

Walter Makous (Psychology), Charles F. Stevens (Physiology and Biophysics), Davida Y. Teller (Psychology and Physiology and Biophysics)

Assistant Professors

E. S. Luschei (Physiology and Biophysics), Richard M. Rose (Psychology)

This interdisciplinary program administered by the Physiology Psychology Group of the Graduate School has been designed to meet an evident need for intensive training in the overlapping area of the behavioral and physiological sciences. Currently, physiology and other departments of medical schools are appointing psychologists to carry on certain types of physiological research and to teach medical students. Psychology departments have long felt the need for individuals more highly conversant with physiological techniques and concepts than is usual for Ph.D.'s in psychology. Further, because physiological psychology is a fruitful research field, numerous research institutes are seeking men trained in both disciplines.

Individuals could take a Ph.D. in each subject. In practice this is rarely feasible, with the result that individuals in physiological psychology and in behavioral neurophysiology are usually less than adequately trained in one or the other of the parent disciplines. Therefore,

it is the aim of the faculty in psychology and the faculty in physiology to work jointly to afford graduate students intensive training in the large area of overlap between the disciplines.

The program of each student will be supervised by a committee of four faculty members. Each student will be expected to do laboratory work in both areas in order to familiarize himself with current research techniques in the respective departments. Although no formal master's degree program is provided, each student will be expected to do independent research in one discipline or the other prior to undertaking a doctoral research program.

Each student will spend approximately one year in basic course work in each discipline. At the conclusion of these two years of study, his training will consist of advanced seminars in either area, and doctoral research.

Because physiological psychology and neurophysiology are strongly developed at the University of Washington, the graduate student will find the latest in instrumentation and research techniques in both fields.

In addition to the facilities of both the Physiology and Psychology Departments, students will have the opportunity of working with laboratory primates at the Regional Primate Center. At the Center there are facilities for a wide variety of behavioral and physiological studies of a number of primate species. Since primates offer unique advantages both for the behavioral and physiological work, the Center is a valuable adjunct to the resources of the training program.

PUBLIC HEALTH STUDIES GROUP

Chairman of Public Health Studies Group

Donovan J. Thompson

F358a Health Sciences Building

Graduate Program Adviser

John P. Fox

F262 Health Sciences Building

Alternate Graduate Program Adviser

Irvin Emanuel

F261f Health Sciences Building

Professors

E. Russell Alexander (Epidemiology and International Health), Robert W. Day (Health Services), John P. Fox (Epidemiology and International Health), N. Robert Frank (Environmental Health), J. Thomas Grayston (Epidemiology and International Health), Sen-itiroh Hakomori (Pathobiology), George E. Kenny (Pathobi-

ology), John A. H. Lee (Environmental Health and Epidemiology and International Health), Kenneth McCaffree (Health Services), James McCarroll (Environmental Health), Edward B. Perrin (Biostatistics), Donald Peterson (Epidemiology and International Health), Donovan J. Thompson (Biostatistics and Environmental Health), San-pin Wang (Pathobiology)

Associate Professors

Abraham Bergman (Health Services), David Discher (Environmental Health), Irvin Emanuel (Epidemiology and International Health), Richard Kronmal (Biostatistics), Peter Kunstadter (Epidemiology and International Health), Joseph Patterson (Health Services), Richard Smith (Health Services)

Assistant Professors

R. Palmer Beasley (Epidemiology and International Health), Peter Breysse (Environmental Health), Norman Breslow (Biostatistics), Marion Cooney (Pathobiology), Polly Feigl (Biostatistics), John O. Fish (Environmental Health), Hjordis M. Foy (Epidemiology and International Health), James L. Gale (Epidemiology and International Health), Betty Gilson (Health Services), Jack B. Hatlen (Environmental Health), John E. Milner (Environmental Health), William Richardson (Health Services), Bertina Wentworth (Pathobiology)

The Public Health Studies Group, comprised of the graduate faculty in the five departments in the School of Public Health and Community Medicine, administers the graduate program leading to the degree of Master of Science in Preventive Medicine. A number of specializations are provided as described below. Admission, in general, requires a bachelor's degree (a prior health sciences doctoral degree may be desirable in certain areas), acceptance by the Graduate School, and adequate preparation for the student's particular field of interest. Stipend support is available for qualified applicants.

Specific specializations include environmental sanitation; industrial hygiene and safety; biostatistics training for health services research; and health services administration and planning. Specializations also are offered in epidemiology and international health and in pathobiology (the biology of infectious agents).

Admission requirements to the specialization in environmental sanitation and in industrial hygiene and safety include a Bachelor of Science degree in environmental health or in a physical or a biological science, with preference accorded to the environmental sanitation applicant with two or more years of experience in environmental health practice. Degree requirements are



six quarters of study, including field applications and research, and a total of 60 course credits plus 9 credits of thesis. A student with undergraduate preparation and experience in environmental health may be able to complete the didactic work in four to five quarters in residence and finish the thesis *in absentia*.

Admission to the biostatistics training for health services research specialization usually requires a bachelor's degree in mathematics or a biological science. Degree requirements include six quarters of study plus an intervening summer for work experience in a health services setting, under the preceptorship of an experienced health services faculty member, and a minimum of 60 course credits plus 9 credits of thesis.

The health services administration and planning specialization accommodates prospective degree candidates in one of three areas of concentration: institutional administration, such as hospitals; medical care organizations and administration, such as group practices, insurance, and other organizational health services delivery programs; and health planning as illustrated by comprehensive health planning agency programs and activities. Admission requirements are those basic to the Graduate School plus some background in this field of interest. Degree requirements include three quarters of study with emphasis on core courses, a summer internship in an institution, agency, or program, followed by an additional three quarters of remaining core work and electives. Total credits required are 72, including 9 credits of thesis.

The pathobiology specialization requires a baccalaureate degree with a major in an area of biology. For admission to the epidemiology specialization preference is given holders of a doctoral degree in a health field, but students with master's level or higher training in relevant fields such as microbiology, anthropology, biostatistics, or nursing will be considered. Degree requirements include 60 credits plus 9 credits of thesis. In rare cases a degree can be obtained in four quarters, but six are normally required.

Further information about specific specializations may be obtained from the graduate program advisers or from the following departments: Biostatistics, Environmental Health, Epidemiology and International Health, Health Services, and Pathobiology.

RADIOLOGICAL SCIENCES

Chairman of Radiological Sciences Group and
Graduate Program Adviser
Kenneth L. Jackson
D218 Health Sciences Building

Professors

Ellsworth C. Alvord, Jr. (Pathology), Lauren R. Donaldson (Fisheries), Arthur W. Fairhall (Chemistry), Melvin M. Figley (Radiology), Stanley P. Gessel (Forest Resources), Milton P. Gordon (Biochemistry), Ralph W. Moulton (Chemical Engineering), Wil B. Nelp (Radiology), Herschel L. Roman (Genetics), Allyn H. Seymour (Fisheries)

Associate Professors

Hans Bichsel (Radiology), Gerald M. Christensen (Radiology), Kenneth L. Jackson (Radiology), Maurice A. Robkin (Nuclear Engineering), Norman S. Wolf (Pathology), Peter Wootton (Radiology)

The program leading to the degree of Master of Science in Radiological Sciences is offered by the Radiological Sciences Group of the Graduate School. Study for this degree is open to students with bachelor's degrees in a physical or biological science or in engineering, depending on the option selected. Several curriculum options are offered in order to satisfy different requirements and interests of biological scientists, physical scientists, or engineers.

Specific course recommendations for each of the options are given below. The curricula include radiological sciences seminars, which are conducted by local and visiting scientists who are active in radiation research. Thesis topics are generally chosen in some area of radiation research, and include studies in radiation biology, radioecology, nuclear medicine, radiochemistry, radiation physics, or nuclear engineering. Thesis research may be carried out in various University laboratories of the School of Medicine, College of Arts and Sciences, College of Engineering, College of Fisheries, or the Laboratory of Radiation Ecology. Opportunity for research in the Hanford Laboratories of the U.S. Atomic Energy Commission may also be provided through special arrangement. There is no foreign language requirement. The general requirements of the Graduate School for the master's degree apply, however, including the completion of 18 credits in courses numbered 500 or above. For specific requirements, see the *Graduate Study* section of this catalog.

A student who has completed any of the recommended courses of his program at a prior time may substitute elective courses with the approval of the Graduate Program Adviser. Electives may be chosen in the fields of biology, medicine, public health, chemistry, physics, mathematics, and engineering.

A student with a deficiency in one area of the prerequisites may be accepted for the program, provided he removes the deficiency during the first year of graduate

study. Credit toward the degree is not ordinarily granted for a course used to remove a deficiency.

Physical Science Option

The Physical Science Option is designed to prepare students for research in radiological physics and for careers in health physics and radiological health. Prerequisites for this option include a bachelor's degree in a physical science or in engineering, Physics 221 (Quantum Physics) and Physics 327 (Introduction to Nuclear Physics) or the equivalent, Mathematics 224 (Intermediate Analysis) or the equivalent, and a year of general biology at the college level.

REQUIRED COURSES*		CREDITS
PHYS 431, 433	Modern Physics Laboratory (3,3)	6
NUC E 484	Introduction to Nuclear Engineering	4
NUC E 485	Nuclear Instruments (3)	
or		
CHEM 410	Radiochemical Techniques and Radioactivity Measurements (3)	3
NUC E 487	Radioactive Tracer Techniques	2
FISH 473	Radionuclides in the Aquatic Environment	3
RADGY 501-502	Biological Effects of Ionizing Radiation	2-2
RADGY 503-504	Laboratory in Radiation Biology	1-1
RADGY 507	Radiation Hazards Analysis and Control	1
RADGY 517	Radiation Dosimetry	4
RAD S 520	Radiological Sciences Seminar (1, max. 6)	1,1
RAD S 700	Master's Thesis	9

Biological Science Option

The Biological Science Option is designed to prepare students for research in radiation biology, and for careers in health physics and radiological health. Prerequisites for this option include a bachelor's degree in a biological science, courses in mathematics through differential and integral calculus and statistics, and chemistry through quantitative analysis and organic chemistry.

REQUIRED COURSES*		CREDITS
500-level course in a biological science		3
RADGY 501-502	Biological Effects of Ionizing Radiation	2-2
RADGY 503-504	Laboratory in Radiation Biology	1-1
RADGY 505	Radiological Physics	2
RADGY 507	Radiation Hazards Analysis and Control	1
FISH 473	Radionuclides in the Aquatic Environment	3
CHEM 350, 351	Elementary Physical Chemistry	3,3
CHEM 410	Radiochemical Techniques and Radioactivity Measurements	3
PHYS 221	Quantum Physics	3
PHYS 327	Introduction to Nuclear Physics	3
RAD S 520	Radiological Sciences Seminar (1, max. 6)	1,1
RAD S 700	Master's Thesis	9

Environmental Science Option

The Environmental Science Option is designed to prepare students for radiation research and for careers in health physics and radiological health with particular reference to evaluation and control in the environment. Prerequisites for this option include Physics 327 (Introduction to Nuclear Physics) or the equivalent, mathematics through differential and integral calculus and statistics, chemistry through quantitative analysis, and

a year of general biology at the college level. An applicant with a bachelor's degree in a physical science or engineering generally will be prepared to pursue this curriculum.

REQUIRED COURSES*		CREDITS
CIV E (Water and Air Resources CEWA) 455	Water Biology (4)	
or		
FISH 473	Radionuclides in the Aquatic Environment (3)	3
CIV E (Water and Air Resources CEWA) 461	Air Resources Engineering I	3
NUC E 484	Introduction to Nuclear Engineering	4
NUC E 485	Nuclear Instruments	3
NUC E 486	Nuclear Power Plants	3
CHEM 410	Radiochemical Techniques and Radioactivity Measurements	3
RADGY 501-502	Biological Effects of Ionizing Radiation	2-2
RADGY 503-504	Laboratory in Radiation Biology	1-1
RADGY 517	Radiation Dosimetry	4
RAD S 520	Radiological Sciences Seminar (1, max. 6)	1,1
RAD S 700	Master's Thesis	9

Medical Radiation Physics Option

The Medical Radiation Physics Option is designed to prepare students for certification and careers as hospital physicists with particular emphasis on cancer radiotherapy. Prerequisites for this option include a bachelor's degree in a physical science or engineering, Physics 221 (Quantum Physics) and Physics 327 (Introduction to Nuclear Physics) or the equivalent.

REQUIRED COURSES*		CREDITS
CONJ 400	Human Anatomy and Physiology	9
PHYS AND BIOPHYS 437	Computer Programming for Biological Research	3
RADGY 501-502	Biological Effects of Ionizing Radiation	2-2
RADGY 505	Radiological Physics	2
RADGY 507	Radiation Hazards Analysis and Control	1
RADGY 517	Radiation Dosimetry	4
NUC E 485	Nuclear Instruments	3
RAD S 520	Radiological Sciences Seminar (1, max. 6)	1,1
RAD S 600	Independent Study or Research (Hospital Physics Board Certification Related Experience)	3
RAD S 700	Master's Thesis	9

RUSSIAN AND EAST EUROPEAN STUDIES

Chairman of Russian and East European Studies Group

W. A. Douglas Jackson

502 Thomson Hall

Graduate Program Adviser

W. A. Douglas Jackson

502 Thompson Hall

Professors

Imre Boba (History), Herbert Ellison (History), W. A. Douglas Jackson (Geography), Lyman H. Legters (Russian and East European Studies), Lew R. Micklesen (Slavic Languages and Literature), John Reshetar (Political Science), Peter Sugar (History), Marc M. Szeftel (History), Donald W. Treadgold (History)

Associate Professors

Ilse Cirtautas (Asian Languages and Literature), Karl Kramer (Slavic Languages and Literature), E. Harold



Swayze (Slavic Languages and Literature), Judith Thornton (Economics), Joseph Velikonja (Geography), James D. West (Slavic Languages and Literature)

Assistant Professors

James Augerot (Slavic Languages and Literature), Herbert Coats (Slavic Languages and Literature), Paul Gribanovsky (Slavic Languages and Literature), Roger Hagglund (Slavic Languages and Literature), Jack Haney (Slavic Languages and Literature), Willis Konick (Slavic Languages and Literature), Jacek I. Romanowski (Geography)

The Russian and East European Program administered by an interdisciplinary group of the Graduate School offers courses leading to the Master of Arts degree. The program faculty, consisting of specialists drawn from a number of cooperating departments and from the Institute for Comparative and Foreign Area Studies, offers specializations in Russian regional studies and in East European regional studies. Inquiries concerning these programs and requests for applications for admission should be addressed to the Graduate Program Adviser.

For complete course listings and further details, refer to the catalog offerings of the Institute for Comparative and Foreign Area Studies, or the Departments of Economics, Geography, History, Political Science, Slavic Languages and Literature and Asian Languages and Literature.

Russian Regional Studies

Admission requirements: Applicants must have the equivalent of six quarters (30 credits) of instruction in Russian at this University. Undergraduate training should have included substantial work in history, political science, economics, geography, or Slavic languages and literature. Students who wish to concentrate in a discipline for which their preparation is inadequate must make up deficiencies in addition to fulfilling the course requirements described below.

Course requirements: Concentration in one discipline (a minimum of 15 credits of course work of which at

least 9 credits should be in courses numbered 500 or above). In addition, at least one course in each of three other disciplines (15 credits) should be taken. A minimum of 39 credits, including 9 thesis credits, must be earned. The thesis normally should be initiated in a seminar of the relevant discipline.

Other requirements: In addition to the thesis, students must pass written and oral examinations pertaining to their area of concentration. Students must pass the Educational Testing Service Examination in Russian.

East European Regional Studies

Admission requirements: Applicants who lack a knowledge of a language of the area will be required to make up the deficiency. However, they must have a reading knowledge of French, German, or Russian before entering the program. An undergraduate major in history, political science, economics, geography, or Slavic languages and literature is desirable, but students with undergraduate training in other fields may be accepted. Students who wish to concentrate in a discipline for which their preparation is inadequate must make up deficiencies in addition to fulfilling the course requirements described below.

Course requirements: Concentration in one discipline (a minimum of 15 credits of course work of which at least 9 credits should be in courses numbered 500 or above). In addition, at least one course in each of three other disciplines (15 credits) should be taken. A minimum of 39 credits, including 9 thesis credits, must be earned. The thesis normally should be initiated in a seminar of the relevant discipline.

Other requirements: In addition to the thesis, students must pass written and oral examinations pertaining to their area of concentration. Language competence in the two languages may be satisfied by passing the Language Proficiency Test, or by the equivalent of two years' training (30 credits for each language).

*Modification of these requirements may be made in special cases at the discretion of the Graduate Program Adviser. More detailed information concerning course content may be obtained by referring to *Description of Courses* section in this catalog.



RULES AND REGULATIONS

The University and its colleges and schools reserve the right to change the 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 courses at any time.

It is the University's expectation that a student will follow University Rules and Regulations as they are stated in the catalog. In instances where no appeal procedure is spelled out and the student is persuaded that a special set of circumstances makes appeal reasonable, he may appeal the application of specific rules or regulations to the Office of the Dean of the School or College in which he is enrolled in the case of an academic matter, or to the Office of Student Affairs in the case of a nonacademic matter. These offices will render a decision on the appeal, arrange for a hearing where appropriate, or refer the student to the proper office for a decision.

University Policy on Student Records

The University continually receives requests from a variety of outside sources for information concerning both former and currently enrolled students. In addition, many offices and departments within the University require access to information contained in student

records. The University must ensure that information contained in these records is treated in a responsible manner with due regard to the personal nature of the information.

General Rule

Except as otherwise indicated in this section or as may be required by law, the University will not provide information contained in student records in response to inquiries from either within or without the University unless the expressed or implied consent of the student has been given. Inquiries from a spouse or relatives, other students, faculty or staff acting as private persons, or from members of extra-university groups or organizations will be treated as coming from outside the University. Requests for information concerning the student as a University employee will be treated as are requests concerning any other University employee. Exceptions to this rule are treated in the following paragraphs.

REQUESTS FROM OUTSIDE THE UNIVERSITY

Unless the student requests otherwise in writing, the University will routinely respond to an individual inquiry about a specific student in regard to name, place and date of birth, dates of attendance, curriculum, degrees, and employment status (if any) with the University.

Parents and legal guardians of unemancipated minors will be provided, upon written request, information



concerning the student's academic record and status, misconduct in academic or other campus activities, and financial information.

Specific questions regarding an emancipated minor shall be referred to the Assistant Attorney General's Division. Generally speaking, an emancipated minor is a person under eighteen years of age who is married or who is not in any way financially dependent upon his parents or legal guardian. A student who wishes to invoke his emancipation to withhold information must inform the Registrar in writing of his status.

Law enforcement agencies investigating specified law violations may, upon request, be provided recorded information that has been officially noted, including any disciplinary action, unless the information was obtained as the result of a privileged relationship. Representatives of such agencies will be required to sign a written request form.

Standard test data regarding individual tests required to form a basis for a decision about an individual may be provided at the discretion of the custodian of the data in response to a written request from a recognized institution of higher learning.

A valid judicial or legislative subpoena of information concerning a student will, in each case, be answered upon prior approval of the Attorney General's Division. Effort will be made to notify the student of the subpoena.

Information obtained during professional medical or psychological treatment or counseling will be released by the professional only in accordance with the ethics of his profession.

REQUESTS FROM INSIDE THE UNIVERSITY

Faculty and staff may obtain the following kinds of information when it is required for the performance of their responsibilities to the University, with the understanding that its use will be strictly limited to the performance of those responsibilities: (1) academic record and status; (2) reports of academic and other campus misconduct, including disciplinary action; (3) results of counseling other than professional, medical, or psychological; (4) national origin and ethnic background; (5) standard test data regarding specific tests when needed for decisions about an individual; (6) student-produced course paper; (7) financial information, including delinquencies, etc.; (8) student evaluative materials, with the consent of the author of the evaluation.

University disciplinary and investigating authorities, including student authorities, appointed in accordance

with faculty regulations, may, if it is in accordance with their duties, have access to information in (1) through (8) above, with the exception of items (4) and (5) (national origin and ethnic background, and standard test data).

Recognized University student organizations, such as scholastic and service honoraries, may obtain information on a student's academic record and status as these relate to eligibility for membership.

Qualified research personnel may, under special circumstances, be permitted access to information contained in a student's records. Permission will be granted only where it has proven impossible to request permission from the student himself, where information obtained will be properly safe-guarded, and where the student will not be identified in released findings.

Except as noted herein, records and reference materials containing evaluations of students may be released only with the consent of both the student and the author of the evaluation.

IMPLIED CONSENT

In cases other than the exceptions cited in this section, every reasonable effort shall be made to obtain consent of the student for release of information concerning him that is contained in University files. In some instances consent may be implied by the nature of the inquiry; for example, in the case of a request from a potential employer or an investigation for security clearance by the student or former student. The student may negate such an implication in a particular case by express written notice filed with the appropriate record-keeping unit.

UNIVERSITY RECORDS

Each of the principal record-keeping administrative units (specifically, the Comptroller, the Counseling Center, the Hall Health Center, the Registrar, the Office of Student Affairs, and the Office of Student Financial Aids) will develop its own procedures in accord with the general policy stated here. Any supplementary regulations found necessary will be filed with the Records Committee which will be responsible for periodic review of policy and procedures.

Disciplinary records shall be kept separate from academic records, and transcripts of a student's academic record shall contain no notation of any such action. Special precautions will be exercised to ensure that information from disciplinary or counseling files is not revealed to unauthorized persons. Provision shall be made for periodic review and routine destruction of noncurrent disciplinary records by the offices maintaining such records.

No records shall be kept that reflect a student's political or ideological beliefs or associations except as required by Part I, Section E (Membership and Offices) of the *Handbook for Student Organizations*.

RECORDS COMMITTEE

The Registrar is the official custodian of academic records and, therefore, is the only official who may issue a transcript. The Registrar, together with a committee of six, including representation from faculty, graduate and undergraduate students, and the Attorney General's Division, will be responsible for reviewing unusual requests for information and for assisting in the interpretation of the rules set forth in this section of the catalog.

Note: The University of Washington reserves the right not to release a student's records or information based upon the records when the student has failed to discharge any obligation to the University.

Student Identification

Each student may obtain, without cost, a photo-identification card at the time of his first registration at the University. This card will be the student's means of establishing entitlement to the rights and privileges which normally accrue to students.

The student photo-identification card may be required by any University agency offering services, activities, or facilities wherein a student priority is to be maintained.

Lost or destroyed photo-identification cards may be replaced by making a request for replacement at the University Cashier's Office and upon payment of a \$5.00 replacement fee. Replacement of cards made invalid by changes in students' names or of cards rendered unusable by normal wear and tear, shall be done free of charge, upon return of the original card.

Cards which have been tampered with or misused may be confiscated by the University agency or department involved; the incident may be referred to the Office of Student Affairs for appropriate University action.

Financial Obligations

The Comptroller is authorized to place a hold (Administrative) on the records of any student who fails to promptly pay amounts due the University.

Until this hold is cleared, the University (1) will not release the student's record or any information based upon the record, (2) will not prepare transcripts, (3) will deny registration for a subsequent quarter, as well as graduation from the University.

In cases of serious financial delinquency, the Comptroller may order that the student's registration be can-

celled, with privileges of attendance withdrawn, effective immediately on notice.

Administrative Hold or cancellation may also occur when a student has not complied with other University rules, procedures, or obligations. The hold may be placed on the student's record by the authorized University office responsible for enforcement of the rule, procedure, or obligation involved. The student will not be permitted to register for any subsequent quarter or obtain a transcript of his record except on the written release of the office which placed the hold.

DEFINITIONS OF GENERAL UNIVERSITY TERMS

Admission, Enrollment, and Registration

Admissibility is determined by examination of the applicant's credentials against the University's scholastic standards and requirements. *Admission* is offered to a person when his qualifications meet the criteria and when a student vacancy that can be assigned to him exists in the school or college in which he plans to follow a course of study.

A person admitted to the University becomes *enrolled* when he gives firm evidence of his intention to attend and to pursue a course of study. If he does not comply with the procedures specified by the University in order to give such evidence of his intention to attend, his admission may be withdrawn and another person admitted to take his place.

Registration is the process whereby a student who has previously been *admitted* and *enrolled* is assigned to one or more courses for one quarter. The time periods during which registration takes place are published by the Registrar.

A Summary of Current Enrollment Procedures

A. Currently, at the University of Washington, a person offered admission for a quarter of the academic year enrolls by making a nonrefundable \$50.00 advance payment on his tuition and fees, excluding Summer Quarter. He remains enrolled for that quarter unless he either fails to register for courses or fails to complete payment of the tuition and fees by the prescribed deadline.

B. Students planning to continue from one quarter to the next succeeding quarter (excluding Summer Quarter) may guarantee their enrollment by including the \$50.00 advance payment of that quarter's tuition and fees with their current quarterly payment.

C. Continuing students who do not make the \$50.00 advance payment for the succeeding quarter lose their



enrollment guarantee and will be accommodated *only* on a space-available basis.

D. On-leave students follow the application procedures for former students described in the "Registration" section.

For additional information, see "Registration" in this section.

College

The University is made up of seven colleges, each of which offers a curriculum (sequence of courses) leading to the Bachelor of Arts or Bachelor of Science degree. A college may include a number of schools, departments, and divisions. The College of Arts and Sciences, for example, includes six schools, twenty-four departments and several divisions.

School

Within the University are two types of schools, independent units (*i.e.*, Business Administration, Dentistry, Law, Medicine, Nursing, Social Work, Public Health and Community Medicine) offering professional training to students who may be required to complete a period of preprofessional study, and units within colleges which offer semiprofessional training in single fields of study (*i.e.*, Art, Communications, Drama, Home Economics, Music, Physical and Health Education).

The Graduate School coordinates the work of students who have already obtained a bachelor's degree, and have been admitted to the School for advanced work toward the master's or doctor's degree.

Department

The unit of instructional organization in a particular science or art is called a department (*e.g.*, History). The department differs from the semiprofessional school in its tendency to place less emphasis on the application of subject matter.

Division

When a field of study includes work offered by several of the more specialized units of the University, it is sometimes called a division. In such cases, a committee of departmental representatives plans and coordinates the program.

Institute

The primary function of an institute is research and advanced study. The institute is usually associated closely with related departments because its staff is largely composed of the department's faculty members who divide their time between teaching and research.

Course

A course is a quarterly unit of study in a particular subject. Each course is listed by number and title under *General Catalog Volume II, Description of Courses*.

Hyphenated Course

Course numbers separated by hyphens (*e.g.*, French 101-102) indicate courses for which no credit is given until both terms have been completed.

Prerequisites

Courses to be completed or conditions to be met before one is eligible to enroll in a more advanced course are called prerequisites (*e.g.*, Design 109 is prerequisite to 110).

Credit

A credit is a measurement of curricular work completed satisfactorily. Ordinarily, 1 credit is given at the University of Washington for one class attendance a week for a period of one quarter. However, in some courses, such as laboratory courses, two or three "clock hours" of attendance a week are required to earn 1 credit. A specified number of credits must be earned for a degree.

Colleges and universities which operate on a "semester basis," that is, divide the academic year into two parts exclusive of a summer session, give semester credit. Quarter credits multiplied by two-thirds equal semester credits. Semester credits multiplied by one and one-half equal quarter credits. For example, a student attending the University of Washington who earns 45 quarter credits during an academic year would have earned 30 semester credits at an institution operating on the semester plan.

Curriculum

The pattern or sequence of courses a student takes in earning his degree is a curriculum. Curricula are outlined in this catalog.

Prescribed and Elected Curricula

In the professional schools and colleges and in most of the schools in the College of Arts and Sciences, the curriculum offered is a prescribed one. Professional training requires intensive study over a long period with few courses in unrelated elective areas. In the less professionalized departments, the elective curricula provide a broad educational background. Therefore, students majoring in these fields of study are given more freedom in choosing their elective credits.

Lower-Division Courses

The four-year program of study is divided into lower division (freshman and sophomore) and upper division

(junior and senior). Lower-division courses are given numbers below 300.

Upper-Division Courses

Junior and senior courses which are given 300 and 400 numbers, respectively, are considered upper-division courses.

Graduate Courses

Courses numbered 500 and above are open to graduates only.

Undergraduate

This term is applied to a student who has not yet received his bachelor's degree.

Graduate

A student who has received his bachelor's degree and who is taking advanced work is a post-baccalaureate student. Professional schools usually adopt their college title such as medical student, law student, etc. The term "Graduate Student" is applied to a student who has been officially admitted to the Graduate School to take advanced work toward a master's or doctor's degree in the Graduate School.

Premajor

The premajor category is provided in certain colleges for those students in the first or second year who have not made a definite choice of major in the college. These students may select, in consultation with an adviser, a program of studies which will meet the broad general requirements of the college and at the same time provide an experimentation and exploration in the subject areas of the college. Each program is planned according to the individual student's needs.

Major

A major indicates the particular curriculum which a student has selected to follow toward a degree. The term *nonmajor*, which frequently appears in the description of courses, indicates a course designed primarily for students who are not specializing in that subject.

Adviser

A member of the college faculty or staff who is appointed to assist students in both educational and personal plans is an adviser.

Bulletin

A bulletin is an official publication issued by the University giving detailed information about such subjects as admissions policy, academic personnel, courses, fees, etc.

Residence (Resident)

This term has two meanings, neither of which refers to living on campus or at home while in attendance:

1. A "resident" is a student whose domicile, as defined by state law, is in Washington and therefore not subject to the additional fee required of nonresident students.
2. A student "in residence" is registered in regular University classes as opposed to extension classes or independent study. Students regularly admitted to the University of Washington are considered to be "in residence" when registered in either day or evening classes.

DEFINITIONS OF STUDENT CLASSIFICATIONS

Classes

Credits are computed on the basis of the 180 minimum credits required for graduation, exclusive of the credits in lower-division ROTC courses. For general purposes, the following apply.

Freshman: 1-44 quarter credits

Sophomore: 45-89 quarter credits

Junior: 90-134 quarter credits

Senior: 135-180 or more quarter credits

Fifth-year: A student with a bachelor's degree who is enrolled as an undergraduate

Graduate: A student with a bachelor's degree who has been granted admission to the Graduate School

Other Students

See *Scholastic Standards Required for Graduation* in this section.

Matriculated

A matriculated student is one who has been formally admitted to the University and who will register, presumably, in a program of studies leading to a degree or certificate.

Nonmatriculated

A nonmatriculated student is one who will be permitted to register for credit, on a space-available basis, but who has not been formally accepted into a program of studies leading to a degree or teaching or administration credential. Acceptance as a nonmatriculated student implies no commitment on the part of the University regarding regular admission at some later time. However, credits earned while in the nonmatriculated classification may apply toward requirements for the bacca-



laureate degree should a student later be accepted for a degree program. At least 45 credits must be earned in a matriculated status to meet graduation requirements.

Except for Visiting Graduate Students, whose admission and enrollment are authorized by the Dean of the Graduate School, nonmatriculated students may not enroll for courses numbered 500 and above without special permission.

Enrollment with nonmatriculated standing for the Summer Quarter is routinely available for currently employed school teachers and administrators with the understanding that credits earned in this classification may not apply toward a teaching or administrative credential. This arrangement also serves graduating high school seniors who would qualify for matriculated standing and other undergraduate students in good standing (grade-point average of 2.00 or above) at other colleges and universities seeking neither a degree nor certification from the University of Washington. For complete information, please consult the *Summer Quarter Bulletin*.

Enrollment during other quarters of the school year is at the discretion of the Board of Admissions. Applicants for nonmatriculated standing are considered individually and permitted to enroll on evidence of their probable success in achieving their limited educational objectives to the extent University facilities are available. Applicants with previous records of unsatisfactory scholarship are not ordinarily accepted as nonmatriculated students.

Students may audit certain nonlaboratory courses or the lecture part of laboratory courses for no credit. Students wishing only to audit ordinarily enroll with nonmatriculated standing and pay the same fees as other students. This classification is open to mature individuals with the understanding that auditors may not take an examination in or obtain credit for audited courses except by taking the course later as a regular student and satisfying all of the requirements for credit.

Students who have been dropped for low scholarship or new applicants who do not qualify for admission may not register as auditors until they have been reinstated or accepted as regular students by the University.

ADMISSION

Admissibility

Admissibility is determined by examination of the applicant's credentials against the University's scholastic standards and requirements. *Admission* is offered to a person when his qualifications meet the criteria and

when a student vacancy that can be assigned to him exists in the school, college, or department in which he plans to follow a course of study.

Correspondence regarding admission as an undergraduate to any division of the University and the transfer of credit from another collegiate institution should be addressed to the Office of Undergraduate Admissions. (See sections on *Undergraduate Education* or *Graduate Study* for admission requirements and procedures.)

The Board of Admissions, Scholastic Standards, and Graduation has been delegated to interpret and administer undergraduate admission regulations established by University faculties. In general, admissibility is determined according to the applicant's scholastic standing and the adequacy of his preparation for University study while in high school or another collegiate institution, with preference given, as necessary, to those with the greater probability of success in completing a degree program. In the event that there are more applicants than can be accommodated, the satisfaction of minimum admission standards does not guarantee acceptance. Special consideration is given, as necessary, to the academic qualifications, the date of application, and to the applicant's choice of curriculum and the availability of space at the proposed level of entrance.

In determining the adequacy of an applicant's preparation, 5 quarter credits of elementary course work at the college level is considered equivalent to 1 high school unit in a given subject. The foregoing equivalency is used for purposes of admission only and a student who has not completed all of the high school courses specified for admission will be expected to select college-level courses which will provide a breadth of intellectual experience at least equivalent to that indicated by the subject matter criteria. The courses and number of credits to be allowed shall be determined by the student's college adviser after consideration of recommendations by the department in the University which presents courses in the subjects not included in the high school study.

Explanation of Terms Associated with Admission

For purposes of admission, an applicant's scholastic achievement in secondary or higher schools is determined by a grade-point average computed on a 4.00 system. In determining the acceptability of transfer students, the University considers grades earned in all college-level courses attempted which are appropriate for a baccalaureate degree. Applicants from schools using nonpunitive grading systems may be required to take tests or to provide other supplementary information for determining admissibility.

The University recognizes diplomas awarded by high schools accredited by their respective regional accrediting associations, their state departments of public instruction, or their state universities. Recognition is given to degrees awarded by colleges and universities which are fully accredited by their regional accrediting associations.

An applicant who has not fulfilled the criteria specified for admission or whose education was received in an unaccredited school may request individual consideration by the Board of Admissions, Scholastic Standards, and Graduation. In such cases, the Board may require scores on tests or other evidence of probable success in a university program. Students accepted by the Board are expected to comply with any specifications outlined by the Board at the time of admission.

Entrance Examinations

Scores on the Scholastic Aptitude Test of the College Entrance Examination Board or the American College Test are required of all out-of-state students applying for admission as freshmen. Resident students need to submit only scores on the WPCTP. In making arrangements for a test, the applicant should request that the scores be sent to the University of Washington Office of Undergraduate Admissions. In addition, the Office of Admissions should be informed as to when the tests will be taken in order that it may anticipate the arrival of the test scores.

Scores on other tests offered through CEEB or ACT, while not required in many cases, receive individual attention in terms of admission, placement, and/or credit.

Allowance of Transfer Credits

a. The University of Washington reserves the right to accept or reject credits earned at other collegiate institutions. In general, it shall be the University's policy to accept credits earned at institutions fully accredited by their respective regional accrediting associations, provided that such credits have been acquired through university-level courses appropriate to the student's degree curriculum at the University of Washington.

b. The advanced standing for which an applicant's training appears to fit him shall be granted tentatively on admission. Definite advanced standing shall not be determined until the student has completed at least one quarter in residence.

c. Transfer of credit from institutions accredited for two-year programs only (community and junior colleges) shall apply on the University freshman and sophomore years only. A student who has completed a portion of his freshman and/or sophomore years in a four-

year college may not transfer junior college credit in excess of that necessary to completion of the first two years in the University. In no case shall the transfer of junior college credit to the University exceed 90 quarter credits.

d. Courses from Washington community colleges that have been identified as equivalent to University numbered courses, are so accepted and apply toward the baccalaureate degree exactly as their counterparts taken at the University. Other courses that are also academic in nature (although not necessarily equivalent) but drawn from areas of instruction offered by the University are accepted as electives. Such courses are identified with the department or area and they apply as distribution requirements or electives to the extent the curriculum permits. They may not be used in lieu of courses specifically required by the curriculum without approval of the college concerned. Individual consideration is given to applicants who have participated successfully in an occupational-vocational program. Partial credit may sometimes be given at the point of admission, depending on the quality of the work and its relevance to the proposed University program. The application of such credits toward the degree, however, requires the approval of the college adviser concerned and depends on the extent to which the student's curriculum allows space for free electives.

e. At the point of admission, students who have earned no more than 45 credit hours of transferable college-level courses may submit test results from the College Level Examination Program (CLEP) for possible advance credit. The use of all CLEP test scores toward meeting specific degree requirements is at the discretion of the separate colleges. Consult with the Bureau of Testing, telephone (206) 543-1170, for program details.

f. The University reserves the right to accept or reject credits earned in educational programs sponsored by the Armed Forces. In general, careful consideration will be given to work completed according to recommendations made by the American Council of Education and in terms of University degree requirements. If a student repeats a course taken through the Armed Forces that was accepted for credit, the University credit shall be honored and the other credits cancelled. The maximum number of credits obtainable through completion of such programs shall be 30.

g. Course work completed in unaccredited institutions may be validated or certified for credit through examinations described under "Examinations" in the section on *Undergraduate Education*, or through an examination or other appropriate means to be determined by



the chairman of the University's subject matter department concerned. The fee for this service shall be the same as that charged for the other examinations. Consult the Office of Undergraduate Admissions with regard to the appropriate procedure.

h. Credit acquired through procedures described in paragraphs e, f, and g, shall be included in the 90 maximum extension credits allowed toward the baccalaureate degree.

Veterans and Children of Deceased Veterans

Veterans and children of deceased veterans who wish to inquire about their eligibility for benefits, should contact the regional office of the Veterans' Administration or the University Office of Veteran Affairs.

Independent Study

Independent Study courses are available to all who can pursue the work with profit to themselves regardless of previous academic accomplishment. See other sections in this catalog or consult the appropriate office for information regarding eligibility for course work, registration procedure, and regulations governing the application of correspondence credit toward the 90 credits of extension allowed.

REGISTRATION

No person, other than faculty members attending informally with the approval of the instructor, may attend a University course in which he has not been registered.

The only authority for an instructor to enroll a student in his class is the student's name on a class list or an official class card from the Registrar's Office.

Auditors

a. With the consent of the instructor, and to the extent that space is available after regular students have been accommodated, a student may register as an auditor in a nonlaboratory course or the lecture part of a laboratory course.

b. The instructor may cancel the audit registration of any student whose attendance is not satisfactory.

c. No person who audits a course may participate in class discussion or laboratory work, take an examination in the course, or obtain credit therefor except by taking the course later as a regular student and satisfying all the requirements for credit, or by applying for credit by examination.

d. The fee for auditing a course shall be the same as if the course were taken for credit.

e. No record of an audited course shall appear on a student's record.

Announcements

Registration dates and procedures are announced to students in residence via posters placed on campus bulletin boards, in official and informal notices in the *Daily*, in various University bulletins, and in the quarterly *Time Schedule*. Students should watch these sources for instructions for completing their registration.

New students, and returning students (those who have been out of school for one quarter or more), should familiarize themselves with the registration procedures contained in the various forms and bulletins available to them from the Office of Admissions and the Registrar. (See also the *Academic Calendar* in this Catalog.)

Addresses of Students

The student will be held responsible for keeping his address up to date in the Registrar's Office by filling out a Change of Address card at the Registration Office, Schmitz Hall. *Delivery of official mail to the last address on record constitutes official notification to a student.*

Methods of Registration

There are two methods of registration at the University of Washington: (1) *Preregistration*, which is open only to currently registered matriculated students. (2) *Registration*, which is for currently registered nonmatriculated students and new and former students.

Currently registered matriculated students who plan to attend the next quarter must make a \$50.00 advance payment of that quarter's tuition and fees (Summer Quarter excepted) and should participate in preregistration.

The advance payment is due with the balance of the current quarter's fees. Students who make the \$50.00 payment by the deadline are guaranteed a place for that quarter. The advance payment is not transferable to another person or quarter and is not generally refundable; it will be applied as a partial payment of the quarter's fees. The advance payment is refundable only in certain cases and petitions for refund must be filed with the Comptroller's Office, 200 Administration Building.

Students who participate in preregistration but do not comply with the advance payment request will not have their classes scheduled. Authorizations for the new and

former student registration period will be issued to continuing matriculated students *only* if space is available when the authorization is requested.

Currently registered nonmatriculated students who plan to attend the next quarter must make a \$50.00 advance payment of that quarter's tuition and fees. The advance payment is due with the balance of the current quarter's fees. Students who make the \$50.00 payment by the deadline date are guaranteed a place for that quarter. Students in this category who do not participate in preregistration may obtain an authorization for the second registration period. Advance payment is not transferable to another person or quarter; it will be applied as a partial payment of the quarter's fees. Advance payment is refundable only in certain cases. Petitions for refund must be filed with the Comptroller's Office, 200 Administration Building.

Currently enrolled students who have applied for admission in another category, for example, Fifth Year, Graduate School, or the schools of Law, Medicine, or Dentistry, will be considered for admission purposes in the "new student" registration quotas established for the respective categories. If the student is notified of his admissibility to the new category before preregistration for the coming quarter is completed, he may participate in preregistration. If notified after preregistration and the student has not preregistered, he must apply for a registration authorization by following the instructions enclosed with the letter of admissibility.

Students who complete preregistration and make the \$50.00 advance payment but whose registration is cancelled for low scholarship, will be issued an authorization to register if they are subsequently reinstated for the same quarter.

To participate in preregistration, a student must leave his approved registration form in the Registration Office, second floor, Schmitz Hall (engineering students leave their programs in 353 Loew Hall), according to posted instructions within the specified dates. Classes are scheduled in the student's absence. A copy of his assigned program is mailed to him. His enrollment is completed when he pays his fees by mail by a stated deadline (approximately three weeks after the quarter begins).

More detailed instructions for registration are given in each quarter's *Time Schedule*.

Preregistration is not available to new students or former students (returning after an absence of one or more quarters, with the exception of Summer Quarter).

New and returning students must apply by the application closing dates. A registration authorization is required, and the student takes his approved registration form to the Registration Office during the time specified on his registration authorization card. (See "Registration Authorizations" in this section and "Admission Procedure" in the *Undergraduate Education* section.) Registration authorizations may not be available to all eligible returning students and will be issued only to the extent University enrollment quotas permit.

On-Leave Students

Graduate students who have on-leave status with the Graduate School or undergraduates who have been absent from the University for one quarter (with the exception of Summer Quarter) are guaranteed a place if they file a Former Student Enrollment Application by the application deadline and make the \$50.00 advance payment as requested.

Summer Quarter Registration

Registration for the Summer Quarter differs from registration for other quarters in that an advance fee payment is not required.

Matriculated students registered Spring Quarter should participate in preregistration for Summer Quarter. Matriculated students who do not complete preregistration should request a registration authorization for the second registration period.

Nonmatriculated students registered Spring Quarter may request a registration authorization from the Registration Office, second floor, Schmitz Hall.

Returning former students (including on-leave students) must file a Former Student Enrollment Application by the application deadline.

Additional information is available in the *Summer Quarter Bulletin*. Students new to the University Summer Quarter, or former students returning for Summer Quarter, are not automatically guaranteed enrollment Autumn Quarter.

Late Registration

Students who were issued an authorization to register, but failed to submit their registration forms during the prescribed period, may register after the quarter begins. A service charge of \$15.00 will be assessed.

After the first seven calendar days of the quarter no student shall be permitted to register except with the consent of the dean of the college concerned and the written approval of the instructors whose classes he wishes to enter.



Concurrent Registrations

Extension Classes and Independent Study

A student registered for work in residence who wishes to receive credit for an extension or independent study course in the same quarter shall register for such study with the Division of Evening Classes or the Division of Independent Study.

No student in residence may take an extension course without the consent of his dean. This permission, on forms furnished for the purpose, shall be filed with the Division of Evening Classes or the Division of Independent Study, whichever is appropriate to the request.

Concurrent Registrations at Other Collegiate Institutions

Courses taken concurrently at another collegiate institution while the student is in residence at the University of Washington may be credited toward his graduation from the University if approval is granted by the dean of the college. (See "Allowance of Transfer Credits" in this section.)

Registration Authorizations

New student applicants who are found admissible will be mailed a notice of their admissibility and will be requested to confirm their intention to attend the University by returning a \$50.00 advance fee payment. Permission to register and a registration authorization will be issued if space is available when the \$50.00 is received by the University; if space is not available the \$50.00 will be returned. The \$50.00 is not transferable to another person or quarter and is not generally refundable. A detailed list of registration instructions will be included with the registration authorization. Additional directions are given each new student personally when he reports to the University.

Returning former students may request a Former Student Enrollment Application by writing or telephoning the Registrar's Office (206) 543-5920 or by applying in person. Application deadlines are listed in the Academic Calendar in this catalog. All eligible applicants may not be permitted to register if University enrollment quotas have reached capacity. A \$50.00 advance fee payment will be requested as a confirmation of the student's intention to attend. Permission to register and a registration authorization will be issued if space is available when the \$50.00 is received by the University; if space is not available the advance payment will be returned. The \$50.00 is not transferable to another person or quarter and is not generally refundable.

Time Schedule

A *Time Schedule* listing all classes and sections offered is published prior to the registration period for each

quarter. Copies of the current *Time Schedule* are available to students at the Registrar's Office (engineering students at 353 Loew Hall). *Time Schedules* are also available for inspection in each adviser's office.

Special Approvals and/or Clearances Required

Before reporting for registration a student may have one or more of these other steps to complete:

1. Seniors who are registering for a graduate course (500 or above) must have the approval of the instructor of the class and the Dean of the Graduate School.
2. Students in the College of Education must obtain approval of their programs from the Education adviser, regardless of their majors.
3. All private music lessons (applied music courses) must be approved by the School of Music. The class section is also assigned by the School of Music on the student's Registration Form.
4. All librarianship courses, except course 100, must be approved in writing on the student's Registration Form at the School of Librarianship, 111 Library.
5. Students registering for any course for which a permission signature is specified in the *Time Schedule* must obtain a permission card.
6. All former students who have not been in residence for a period of one year must submit a medical examination form to the Student Health Center and obtain medical clearance.

Change of Program

Students making a change to or from pass/fail grading or dropping a course do not need an appointment. Changes to or from pass/fail may only be made during the official Change of Program period.

Students finding errors on their programs should report to Sections for adjustment without waiting for the Change of Program period.

No change of program involving entrance into a new course shall be permitted after the official change period except with the consent of the dean of the college concerned and of the instructor whose class the student wishes to enter.

Service Charge

A service charge of \$5.00 will be assessed for each change of program, or change of section, or drop from a course, or any number of changes of program that are made at the same time, after the official Change of Program period.

Change of Program Procedure

For Adding or Dropping a Course

1. Consult your adviser and obtain a signed Change of Program card.
2. Get course approval signatures for added courses where necessary.
3. Present signed Change of Program card to the Registration Office, second floor of Schmitz Hall, to receive a Change of Program Appointment.
4. Go to Sections, 105 Schmitz Hall, on day and time of appointment. Engineering students go to 353 Loew Hall.

Change of College (excluding the Schools of Law, Medicine, Dentistry, and the Graduate School)

A student currently in school may initiate a change of college at any time by obtaining on the appropriate forms the signatures of the dean of the college in which he is currently registered and the dean of the college that he wishes to enter.

Change of College forms may be obtained at the Registration Office, second floor of Schmitz Hall, or at the office of the dean of the college the student wishes to leave. The request must be filled in by the student and then submitted to the office of the dean of that college for signature. The next step is to present the request form to the office of the dean of the college to which he seeks admission, for written approval. After these steps have been accomplished the completed form must be left immediately at the Registration Office, second floor of Schmitz Hall.

Veterans and children of deceased veterans attending the University under Public Law 550, 894, or 634 must take certain other steps to ensure their continued entitlement to educational benefits. Consult the Office of Veteran Affairs.

Change of Major

The procedure for changing a major varies from college to college. The student should contact his advisory office for change of major information.

Withdrawal from the University

Nonmilitary Withdrawal

1. To be official, a withdrawal from the University must be approved by the student's academic adviser (even if the student is eligible for self advising). The withdrawal form is available at the student's advisory office or the dean's office.
2. After obtaining an academic adviser's approval, the student turns in the withdrawal form at the Registrar's Office.

3. Submission of a graduate on-leave application does not constitute official withdrawal from the University.

4. Students who register and then wish to drop all classes from their program must withdraw from the University.

5. Official withdrawals shall be entered on the student's record as follows:

a. During the first 15 calendar days of the quarter: date of withdrawal only.

b. After the first 15 calendar days of the quarter:

(1) If the student's work in a course is satisfactory at the time of withdrawal, a grade of PW.

(2) If the student's work in a course is not satisfactory at the time of withdrawal, a grade of EW.

5. Withdrawals accomplished by any other method are not official, and result in the entry of the grade E in each of the courses for which the student is registered in the quarter.

6. Veterans attending school under P.L. 550 (Korean), 894 (Korean Disabled), 815 (Peace Time Disabled), or children of deceased veterans attending school under P.L. 634 should notify the Office of Veteran Affairs of their withdrawal.

7. The student with a scholarship or loan awarded through the University should notify the Scholarship and Loan Fiscal Office of his withdrawal.

8. The privilege of military withdrawal will be granted only to students whose induction or enlistment is for extended active duty, not for short-term National Guard or Reserve duty or annual active-duty requirement.

Refund of Fees

All Autumn, Winter, and Spring Quarter fees (except those indicated as not subject to refund) will be cancelled, less an enrollment service charge of \$50.00, if complete withdrawal is made prior to the sixth day of instruction; one half of said fees less a \$25.00 enrollment service charge will be cancelled or refunded if withdrawal is made during the first thirty calendar days, except for Air Force or Army ROTC uniform deposits. At least two weeks must elapse between payment and refund of fees, if payment was made by check. Unless specific instructions are received by the Cashier's Office regarding the fees refunded, all properly authorized refunds will be made to the student involved in the registration.

Military Withdrawal

If a student is drafted or enlists in the Armed Forces, he may take advantage of military withdrawal from the University under the following conditions:



1. A student who withdraws will be granted some academic credit for courses in which he has a C or better grade, and/or a refund of fees, under the following schedule. (The following fee refund schedule applies only to students who are drafted into the Armed Forces. Students who enlist are subject to the non-military withdrawal fee refund or cancellation schedule.)

a. Withdrawal during the first third of the quarter: No credit. Full refund.

b. Withdrawal during the second third of the quarter: One-half academic credit, without letter grade, and with courses unspecified. Unspecified credit may later be converted to credit and grade by credit examination. One-half refund.

c. Withdrawal during the last third of the quarter: Full academic credit, without letter grade, and with courses specified. (If withdrawal occurs during the last five days of the quarter, letter grades may be granted at the discretion of the instructors.) Letter grade may later be earned by credit examination. No refund.

Note: Withdrawal dates are based on days of instruction and do not include the final examination period.

2. If a student is in his last quarter before obtaining a degree from the University, he will be granted the degree provided:

a. That at the beginning of the quarter his cumulative grade-point average is high enough for graduation.

b. That his degree has been approved by his department chairman and dean.

c. That his grades for the completed portion of the quarter are C or better in each course necessary for graduation.

This third proviso may be waived if the withdrawal occurs so soon after the beginning of the quarter that determination of a grade is impossible.

3. The student will be expected to attend classes and withdraw no more than fifteen calendar days before his date to report for duty.

4. The provisions of military withdrawal apply to students enrolled in extension classes as well as to those in residence.

5. Should the foregoing provisions conflict with standards imposed upon a professional college or school by accrediting or licensing agencies, the dean or chairman of the college or school shall approve the conditions of military withdrawal.

Dropping a Course

A drop from a course is voluntary severance by the student of his connection with the course.

Drops from courses accomplished by any method, except those set forth in paragraphs 1. and 2. below, are unofficial and the grade for the course shall be entered on the student's record as E.

1. During the first 15 calendar days of the quarter: To drop a course the student should obtain his adviser's approval (unless eligible for self advising) on the yellow Change of Program Request form obtainable at the advisory office. He should present the form at Sections. A \$5.00 change fee is required after the official Change of Program period.

Courses dropped officially during this period are not entered on the student's record.

2. After the first 15 calendar days of the quarter: To drop a course, the student should obtain his adviser's approval (unless eligible for self advising) on the yellow Change of Program request form obtainable at the advisory office. The signature of the instructor, with the appropriate grade for the course, must also be obtained. The student must then present the form at Sections within five days of the date of the instructor's signature and in no case after the final examination week has begun. A \$50.00 change fee will be charged.

If the student's work is satisfactory at the time of the drop, a grade of PW will be entered on his record; if the student's work is unsatisfactory at the time of the drop, a grade of EW will be entered on his record.

3. No official withdrawal may be made during the final examination period.

GRADES

The following system of grades is in effect at the University, subject to certain exceptions in the Schools of Medicine, Dentistry, and Law.

	GRADE POINTS PER REGISTERED CREDIT
A—Honor	4
B—Good	3
C—Medium	2
D—Poor (low pass)	1
E—Failed, or unofficial withdrawal	0
I—Incomplete	0
N—Without grade (hyphenated course)	0
S—Passing grade for courses taken on a pass/fail basis, and for courses numbered 500 and above	0

PW—Official withdrawal after the first fifteen calendar days of a quarter if student's work is satisfactory at the time of withdrawal 0

EW—Was doing failing work at the time of official withdrawal after the first 15 calendar days of the quarter. Computed as E.

X—Grade not received from the instructor 0

Optional Pass/Fail Grading System

A student may participate in an optional pass/fail grading system under the conditions and restrictions of his school or college. Questions regarding any aspect of the pass/fail system should be directed to the student's adviser.

Starting Autumn Quarter 1972, three credit/no credit options will be available.

I. Credit/No Credit as an Undergraduate Student Option

(a) *Admission:* An undergraduate in good academic standing may register at any stage of his academic career in the University on a Credit/No Credit basis with the stipulation that all courses taken concurrently be taken on that basis. He may enter the Credit/No Credit program only twice; that is, a student may re-enter the C/NC program only once after a resignation from it. He enters the program only by submitting an entrance form during the official registration and change period and he resigns from the program only by submitting an exit form during the registration and change period. The entrance and exit forms will be available in the Registrar's Office and in advisers' offices.

All courses taken concurrently while enrolled under the C/NC program must be taken for Credit/No Credit. A maximum of 20 credits may be taken in any one quarter, unless the student has his dean's permission.

(b) *Recording:* Each instructor will report conventional letter grades (A, B, C, etc.) to the Registrar.

For students electing the C/NC option, the Registrar will record "cr" on the transcript if the letter grade is A, B, or C. The actual letter grade will be kept by the Registrar for purposes of evaluating the program. If the student requests, in writing, a waiver of letter grades, the instructor shall report only "cr" for satisfactory work.

(c) *Transcripts:* A student who has taken all classes C/NC will receive a transcript showing only the courses for which he has received credit. Courses for which the student registered but did not receive credit will not be on the transcript. A student who has taken some of his classes Credit/No Credit and some on the graded

system will receive a transcript showing "cr" for the courses he took while on Credit/No Credit and grades for the courses he took while on the graded system. A notation will indicate that the student's grade-point average is calculated only on the basis of the courses he took while on grades.

(d) *Good Standing and Academic Probation:* A student on Credit/No Credit is in good academic standing as long as he maintains an average of 12 credits per quarter. Except as noted below, any student who does not maintain a 12-credit per quarter average will be placed on academic probation. Any student who fails to receive at least 12 credits in his *first* quarter at the University shall be warned that his scholarship is unsatisfactory, and that if he fails to achieve a cumulative average of 12 credits per quarter by the end of the second quarter he will be placed on academic probation. Any student on academic probation will be dropped: (1) If he fails to attain at least 12 credits for the following quarter's work, or (2) if he fails to attain a cumulative 12 credits per quarter average at the end of the two subsequent quarters. Any student dropped under this rule will be notified in writing of this action by the Registrar.

A Credit/No Credit student when first placed on academic probation may elect to return to the graded system, but he does so with probationary status and must achieve a 2.00 grade-point average for at least 12 credits of work by the end of his first graded quarter or be dropped from the University. At the end of the second quarter he must have a 2.00 cumulative grade-point average or be dropped. A Credit/No Credit student placed on probation for a second time may not elect to return to the graded system until he has regained good academic standing.

The Credit/No Credit system shall be adapted to the provisions of the Educational Opportunity Program relating to a reduced credit-load and good standing.

(e) *Pass-Fail:* Participation in the Credit/No Credit program shall in no way affect a student's eligibility to take courses pass/fail if he chooses to revert to the traditional grading system. If he takes a pass/fail course while on Credit/No Credit, Pass will become Credit and Fail will become No Credit. No entry will be made for No Credit.

(f) *Granting of Degrees:* When a student has completed the requirements for his academic major under the C/NC system or any combination of the C/NC and graded systems, he will be eligible to receive a bachelor's degree, provided that the responsible depart-



ment, committee, or division has agreed to accept the C/NC system for the major.

II. Credit/No Credit as a Course Option

(a) With appropriate departmental review and approval, faculty may offer a course or courses on a Credit/No Credit basis. The standard for granting credit in C/NC courses under this option will be the demonstration of competence in the material of the course to the instructor's satisfaction. The course option would include the following provisions:

(1) *Participation:* Registration in C/NC courses under the Course Option will not affect a graded student's right to take other courses for conventional grades concurrently.

(2) *Evaluation:* All students enrolled in such courses would be evaluated on the same basis whether or not they were working on the Credit/No Credit student option. A student on the traditional grading system shall have "cr" entered on his transcript if he passes, but this grade will not be used in the computation of his grade-point average. If he receives no credit, "nc" will be entered on his record, but this grade will not be used in the computation of his grade-point average.

III. Credit/No Credit as a Group Option

(a) With the review and approval of the appropriate administrative body, a self contained academic unit, such as the proposed Lower Division Residential Program, may adopt a Credit/No Credit system on an experimental basis. Continuation of the system would be contingent on the results of an evaluation.

It should be noted that the possibility of future objective evaluation of the student's total academic record is reduced by the extent to which the record includes course work which is evaluated by other than the traditional A, B, C, D, E, (or comparable) grading system. Students should be aware that they may, and probably will, be jeopardizing their future educational opportunities, particularly for graduate or post-baccalaureate professional study, when other systems of performance evaluation (e.g. pass/fail or credit/no credit) are used.

Failures

The grade of E shall be final. A student receiving the grade of E in a course may obtain credit for it only by re-registering for the course and repeating it, as prescribed in *Repeating of Courses* in this section.

Incompletes

An Incomplete shall be given only in case the student has been in attendance and has done satisfactory work to within two weeks of the end of the quarter and has furnished proof satisfactory to his instructor that he

cannot complete his work because of illness or other circumstances beyond his control. A written statement of the reason for the giving of the Incomplete, listing the work which the student will need to do to remove it, must be filed by the instructor with the head of the department or the dean of the college in which the course is given.

In order to obtain credit for the course a student must convert an Incomplete into a passing grade no later than the last day of his next quarter in residence. This rule may be waived by the dean of the college in which the course was offered only if the nature of the uncompleted work is such as to make the fulfillment of this requirement impossible. In no case can an Incomplete be converted to a passing grade after a lapse of two years or more.

Grade of N

The grade of N may be given only in thesis, research, and hyphenated courses in which the grade is dependent upon the work of a subsequent final quarter. When the grade of N is given in a course it indicates that the work has been completed to the end of the quarter in which the N is given. It shall carry with it no credit or grade until a regular grade is assigned. The use of the N grade shall be optional.

Grades of PW, EW

Students making an official withdrawal during the first fifteen calendar days of a quarter shall be given no grade. Students who officially withdraw after the first fifteen calendar days of a quarter and are doing satisfactory work (D or better) in a course shall be given the grade of PW, which will count neither as registered hours nor as grade points. Students who withdraw after the first fifteen calendar days of a quarter and who are doing unsatisfactory work at the time of withdrawal, shall be given the grade of EW. An EW is computed as an E on the student's record.

Change of Grade

Except in cases of error, no instructor may change a grade which he has turned in to the Registrar. If a student finds omissions or possible errors in his grade report, he must make application to the Registrar for a review of his record not later than the last day of his next quarter in residence, and in no case after a lapse of two years. Time spent in military service will not be counted as part of the two-year limitation.

SCHOLARSHIP RULES

Once an "S" grade is given to a student, it continues as the permanent grade and will not later be changed into an A, B, C, D, or any other grade.

If a student believes he has been improperly graded, he will first discuss the matter with his instructor. If he is not satisfied with the instructor's explanation, he may submit a written appeal to the chairman of the department (in a nondepartmentalized college, the dean), with a copy of the appeal sent to the instructor, and the chairman (or dean) will consult with the instructor to ensure that the evaluation of the student's performance has not been arbitrary or capricious.

Once a student submits a written appeal, this document and all subsequent actions on this appeal will be recorded in written form for deposit in a department (or college) file.

Repeating of Courses

Schools of Medicine, Dentistry, and Law are excepted.

All grades earned at the University of Washington will appear on the permanent record and will be included in the cumulative grade-point average until the student notifies the Registrar, in writing, that he has repeated a course at the University of Washington. At that time, only the grade earned the last time the repeated course was taken will be included in the cumulative grade point. Any grade *not* included in the grade-point average will be identified by a diagonal line through the grade.

Duplication of Credit: A student may not receive University credit for courses taken at the University that duplicate courses taken previously and for which credit has been allowed. This rule applies whether the earlier course was taken in high school or college, and whether, in the latter case, course numbers are or are not duplicated. If continuation of previous study is involved (e.g., foreign language), proper placement for credit in University courses shall be determined by the department that offers the subject.

School of Medicine

The School of Medicine maintains a record of each medical student's performance and reports to the Registrar's Office only courses satisfactorily completed.

Each department keeps careful records of student work. At the end of each academic year the Executive Committee of the School of Medicine evaluates the accomplishment of the student during that year and determines his fitness for promotion. When general academic achievement is unsatisfactory in any year, the student is subject to dismissal from the School. Even though a student who has been dismissed from the School of Medicine may succeed in passing a medical school course which he has previously failed by taking it as part of his course in another school or college, this is

not regarded as evidence that a student's abilities justify readmitting him to Medical School. Students who have been dismissed because of low scholarship can be readmitted only by action of the Executive Committee; those who are readmitted are on probation and must maintain a quality of work consistently above the minimum requirements. The faculty of the School of Medicine does not favor repetition of courses in cases of low scholarship and will not permit a student to repeat a year of work except when illness or some other extenuating circumstance justifies an exception.

School of Dentistry

The School of Dentistry uses the University grade-point system: A = 4, B = 3, C = 2, D = 1, E = 0. Calculation of the grade-point average is made by multiplying the grade point received in a course by the number of credits earned in the course, totaling these values, and dividing by the total number of credits earned. Students are notified of their grades at the end of each quarter.

A student who has less than a 2.00 grade-point average in the courses for which he is registered during any given quarter is referred to the Executive Committee of the School. If the work in a course is incomplete or inadequate, a grade of I may be given. This Incomplete must be removed before September 15 if the student is to advance into the next year's class.

School of Law

1. In lieu of the letters A, B, C, D, and E, the numerical scale shall be substituted for the letter grades as follows:

A—85-100 B—77-84 C—68-76 D—60-67 E—0-59

2. No grade points shall be assigned to Law School grades.

3. A cumulative numerical average of 68 in law courses is required for graduation.

Grade Reports

Grade reports are automatically mailed to all students, except those in the Schools of Law and Medicine, at the close of the quarter. The grade reports are sent to the permanent mailing address supplied by the student at the time of registration. To assure delivery of grades, any changes in this permanent mailing address should be reported to the Registration Office.

Copies of the quarterly grade reports are also distributed to each student's dean and major department.

Grade Reports to Parents

Parents desiring quarterly reports on the academic progress of unemancipated minor sons or daughters



may request the Registrar's Office to place them on the parents' mailing list.

Grade-Point Averages

The cumulative grade-point average includes only credits granted for courses taken in residence at the University of Washington, and specifically excludes transfer and extension credits and credits earned by examination.

Effective Autumn Quarter 1967, the grade-point average for any regularly admitted student reflects all previous work taken at the University of Washington as either a matriculated or a nonmatriculated student.

Computation of Grade-Point Averages

The grade-point average (GPA) for graduation is computed by dividing the total cumulative grade points by the total credits attempted (TCA).

Letter grades are weighted as follows in computing a grade-point average: A = 4, B = 3, C = 2, D = 1, E = 0, EW = 0. The number of credits is multiplied by the letter value of the grade to give the grade points for each course. The sum of the grade points is then divided by the total credits attempted. Courses elected on a pass/fail basis will be counted as follows: Satisfactory grades will be printed on the Permanent Record as an "S" and will not count in the quarterly or cumulative grade-point average but will count in the earned column on the permanent record. Unsatisfactory grades (E or EW) will count in the quarterly and cumulative grade-point average but will not count in the credit earned column on the permanent record.

On the Quarterly Grade Report for students in the Graduate School all courses numbered 100 through 800 with grades earned are listed. In computing a student's grade-point average, *letter system grades* (and E grades obtained on the pass/fail system) are considered for 300-, 400-, and 500-level courses. However, S and N grades are not considered, nor are *letter system grades* (nor E grades obtained on the pass/fail system) for 100-, 200-, 600-, 700, and 800 enrollments. Credits in these courses will be excluded from the quarterly and cumulative grade-point average, but with the exception of 100- and 200-level courses, will be included in the credit earned column on the permanent record.

EXAMPLE I: A TYPICAL GRADE REPORT

Autumn Quarter

COURSE	CREDIT	GRADE	GRADE POINTS
ENGLISH 101	3	C (2) =	6
GEOLOGY 101	5	B (3) =	15
SPEECH 100	5	A (4) =	20
GEOGRAPHY 258	2	B (3) =	6
Total credits attempted (TCA)	15		47
Grade-point Average = $47 \div 15 = 3.13$			

It should be emphasized that the total credits attempted and not the credits earned toward graduation are used in computing a grade-point average.

EXAMPLE II: A FAILURE AND AN INCOMPLETE

Autumn Quarter

COURSE	CREDIT	GRADE	GRADE POINTS
ENGLISH 101	3	C (2) =	6
GEOLOGY 101	5*	B (0) =	0
SPEECH 100	5	B (3) =	15
PHYS. EDUC. 114	[1]†	I	
Total credits attempted (TCA)	13	8	21
Grade-point Average = $21 \div 13 = 1.61$			

Advanced Credit and Placement

Advanced credit and/or placement is not applicable to an advanced degree in the Graduate School.

The following programs govern advanced credit and/or placement applicable to undergraduate degrees.

1. Students who have completed college-level courses in high school through the Advanced Placement Program should have the results submitted to the Bureau of Testing. Academic departments, in consultation with the Advanced Placement Coordinator of the Bureau, and sometimes with the students, will evaluate AP test results (following the guidelines of College Advanced Placement Policies) for possible advanced credit and/or placement.

2. Upon application by the student, on a petition especially prepared for this purpose and available in the Registrar's Office, certain specified credits in foreign language and/or mathematics may, under the stated conditions, be granted:

(a) Credit for any elementary foreign language course which has been taken at the University without credit, except that the provisions concerning hyphenated courses still apply.

(b) Any student who has placed in the third quarter of the second-year University language sequence may receive 5 credits of advanced credit for the second quarter of the second-year course, provided he has successfully completed the course in which he was placed. Similarly, a student whose high school study brought him to the level of the completion of the second year of University study will be granted 10 credits for the second- and third-quarter courses of the second-year sequence, provided he has successfully completed an upper-division course other than courses in translation.

* The 5 registered credits in Geology 101 for which no credit was received are included in the TCA.

† The 1 registered credit in Physical Education 114 in which an Incomplete was received is not included.

(c) Credit will be granted to any student who has been placed by examination at the level of Mathematics 125 or higher. If the student's first University mathematics course was 125, he will be given credit for Mathematics 124, and a student whose first mathematics course was 126 will be given credit for both Mathematics 124 and 125.

(d) Examinations for credit in courses offered by the University may be taken on work done by private study by a currently registered student who has been regularly admitted to the University. Freshmen with strong backgrounds in general education may be eligible for advanced credit in the broad areas of the humanities, social sciences, natural sciences, mathematics, or English through special tests of the College Level Examination Program (consult the Bureau of Testing for details). Credit examinations may also be taken to gain credit for courses taken in an unaccredited institution. It is recommended that application for credit by examination for such work be made during the student's first quarter in residence.

No duplication of credit shall be permitted. No one may take an examination for a course in which he has received transfer credit or has been registered for credit at the University.

All credits secured by examination shall be counted as extension credits and shall be included in the 90 extension credit maximum allowed toward the bachelor's degree. No credit will be allowed by examination with a grade less than C.

Within a given field of study no student shall receive credit in subject matter more elementary than that for which he has previously received credit.

No student shall be permitted to repeat any examination for advanced credit.

No student shall receive credit by examination for lower-division courses in his native language.

Credit granted through examination is not included in the student's cumulative grade-point average.

The procedure for authorizing, formulating, and conducting credit by examination shall be as follows:

1. A student who wishes to qualify for credit by examination shall apply to the Registrar for a certificate of eligibility. The student shall then present it for signed approval to an instructor responsible for the course in which the examination is to be taken, to the chairman of the department concerned, and/or to the dean of the college or school concerned. If such

approvals are granted, the student shall then have the application approved and signed, and pay a charge of \$25.00 per course to be gained by examination.

2. The department or school shall prepare appropriate examinations for credit and transmit them to the Registrar. The department or school shall submit with each examination any necessary list of authorized supplementary material. Each such list shall be issued to the examination proctors and to those taking the examination for which the list is prepared.

3. The chairman of the school or department giving the examination shall have the responsibility of approving it. In general, examinations shall be of sufficient scope to occupy the qualified student a minimum of three hours and a maximum of four hours in a test on a 3-, 4-, or 5-credit course; and a minimum of two and maximum of three hours in a test on a 1- or 2-credit course.

4. The Registrar shall designate a time in each quarter during which all approved examinations shall be given. Such examinations shall be supervised by the Bureau of Testing.

5. No student shall be permitted to take in one day more than two examinations in 3-, 4-, or 5-credit courses, or more than three examinations in 1- or 2-credit courses. An additional day shall be permitted the student who takes more examinations. The student who requires this extra time shall make arrangements for it with the Bureau of Testing.

6. Completed examinations shall be transmitted to the proper schools or departments for grading. Grade reports signed by the instructor and chairman or dean involved shall be sent to the Registrar for recording.

Credit examinations are given once each quarter. Applications must be filed two weeks after the opening of the quarter. The examination date is announced through "Official Notices" in the *Daily* and the academic calendar. Interested students may obtain application forms and direction from the Graduation Section of the Registrar's Office, second floor of Schmitz Hall.

CLEP Credit

Undergraduate students with less than 45 academic credits may earn up to 45 credits by completing a series of CLEP (College Level Examination Program) general examinations. Not all colleges and schools in the University recognize the CLEP program and, therefore, interested students should contact their academic adviser for detailed information.



Academic Probation

Except as noted below, any undergraduate student shall be placed on academic probation when his cumulative grade-point average falls below 2.00. Such action will be recorded on the student's official academic record. Any undergraduate student whose grade-point average for the first quarter at the University falls below 2.00 shall be warned that his scholarship is unsatisfactory, and that if he fails to achieve a cumulative grade-point average of 2.00 by the end of the second quarter he will be placed on academic probation. The Registrar under delegated authority from the dean of the college in which the student is enrolled shall notify the student as soon as possible that either (a) his scholarship is unsatisfactory, or (b) he has been placed on scholastic probation. The student is reminded further that he should consult with his academic adviser immediately to discuss future academic plans.

Effect of Academic Probation

Academic probation is essentially a warning to the student that he must show improvement if he is to remain in the University. University regulations regarding scholastic eligibility for participation in intercollegiate athletics and other student activities shall be recommended to the Senate by appropriate faculty committees.

Removal from Academic Probation

An undergraduate student on academic probation will be removed from probation at the end of any quarter in which his cumulative grade-point average reaches 2.00 or better.

Dismissal for Low Scholarship

Any undergraduate student on academic probation will be dropped (1) if he fails to attain at least a 2.00 for the following quarter's work, or (2) if he fails to attain a 2.00 cumulative average at the end of the two subsequent quarters. Any student dropped under this rule will be notified in writing of this action by the Registrar.

Reinstatement

Only under exceptional circumstances will a student dropped under low scholarship rules be readmitted to the University. Such a student will be readmitted only at the discretion of the dean of the school or college to which he seeks admission. A student readmitted after being dropped under these rules will enter on academic probation. Such a student will be dropped (1) if he fails to attain a 2.00 for the following quarter's work, or (2) if he fails to attain a 2.00 cumulative average at the end of the two subsequent quarters. He will be

removed from probation at the end of the quarter in which his cumulative grade-point average reaches 2.00 or better.

Seniors in Final Quarter

A senior who has completed the required number of credits for graduation, but whose work in what would normally be his final quarter places him on probation will not receive a degree until he has been removed from probation. A senior who has completed the required number of credits for graduation, but whose work in his last quarter results in his being dropped for low scholarship, shall not receive a degree until he has been readmitted and removed from probation.

UNIVERSITY REQUIREMENTS FOR BACHELOR'S DEGREE

There are three types of requirements for the bachelor's degree. These are all-University, college or school, and departmental requirements. All-University requirements are listed here. Any college may make additional requirements for graduation. Those of colleges, schools, and departments will be found in the section of the college or school concerned.

Educational Opportunity Program

In recognition of the host of factors which may have interfered with the pre-college education of students from certain ethnic minorities as well as those coming from a background of severe poverty, the University administers the Educational Opportunity Program. These students are admitted under special admission standards which have been developed to afford them essentially the same opportunity for higher education as that available to others.

Since many of these students enter the University with significant academic deficiencies, the Program has been designated by the College of Arts and Sciences as a five-year curriculum leading to a baccalaureate degree. Special supportive services including "bridging" courses are also provided to help the student overcome scholastic deficiencies.

Catalog for Graduation Requirements

If less than ten years have elapsed since the date of a student's last entry into the school or college in which he is to graduate, he may choose to graduate under the requirements of either the catalog dated as of his last entry into the school or college, or that catalog covering his anticipated date of graduation. Catalog choice shall be subject to approval of the student's departmental chairman and dean.

If a student wishes to obtain a degree after a lapse of more than ten years from the last date of entry into the school or college in which he is to graduate, the catalog in effect at the date of his graduation will be used. These provisions do not apply to the requirements prescribed by the College of Education for Teaching Certificates.

Graduate students must satisfy the requirements for an advanced degree which are in force at the time the degree is to be awarded.

Credits Required

To be eligible for graduation from the University with the bachelor's degree, a student shall satisfy all other specific requirements and shall offer a minimum of 180 academic credits.

Scholastic Standards Required

To be eligible for the bachelor's degree, a student must earn a cumulative grade-point average of 2.00 for all work done in residence at the University of Washington.

The *graduation* grade-point average is computed when the student has completed all work for his degree, and includes only University of Washington residence credit.

Final-Year Residence

To be recommended for a first or subsequent bachelor's degree, a student must complete his final year of course work (at least 45 credits) as a matriculated student in residence at the University. Exceptions to this rule are the responsibility of the dean of the college or school awarding the degree.

Students in other colleges of the University who wish to receive simultaneously a degree from the College of Arts and Sciences, the School of Business Administration, or the School of Nursing must receive approval from the dean of the college or school concerned at least three quarters before completing the requirements for the desired degree.

Upper-Division Credits

Upper-division credits are those in courses with 300 and 400 numbers.

Transfer credits shall be accepted for upper-division credit *only* when earned at an accredited four-year, degree-granting institution. This rule shall apply to students who entered the University of Washington in the Autumn Quarter, 1958, or thereafter.

Extension and Independent Study Credits

No more than 90 extension credits may be counted toward the bachelor's degree. No more than 45 credits gained in extension courses earned at other institutions may be counted toward the bachelor's degree.

Degrees with Double Majors

Some colleges offer a bachelor's degree with double majors. The student's application for such a degree must show both majors and be approved by the major professors of both departments. Both majors will appear on the permanent record.

Two Bachelor's Degrees at the Same Time

Two bachelor's degrees, with different majors, may be granted at the same time, but the total number of academic credits shall reach a minimum of 45 credits in excess of the number normally required for a first bachelor's degree.

Second Bachelor's Degree

A second bachelor's degree may be granted, but there shall be required for this degree a minimum of 45 additional credits in residence (exceptions to the residency rule are the responsibility of the college or school awarding the degree), and the minimum number of additional grade points shall be 90.

Students working for a second bachelor's degree are not registered in the Graduate School but in the academic division of the University having jurisdiction over the degree sought.

Filing Applications for Bachelor's Degrees

A student should file with the Registrar a written application for his degree, in triplicate, three quarters before his expected date of graduation. Students transferring to the University with senior standing should submit their applications during their first quarter in school. Each application shall be filed in the Registrar's Office and notice shall be sent to the student by the Registrar of the acceptance or rejection of his application. Each quarter the Registrar shall transmit the accepted list of candidates for degrees and certificates to be conferred at the end of that quarter to the dean of the appropriate college or school for his faculty's approval and recommendation to the Board of Regents. The list as approved by his faculty shall then be forwarded by such dean to the Registrar with a recommendation to the Board of Regents that all who fulfill their outstanding requirements for graduation be awarded their respective degrees or certificates. No student shall receive a bachelor's degree, teaching certificate, or other certificate unless his name appears upon the list approved by the faculty of the appropriate school or college during the quarter in which the degree or certificate is to be granted.

It is the student's responsibility to file his application for a degree and/or certificate. Applications and diploma cards may be obtained at the Registrar's Office, or in the major department.



In filling out the application, with the assistance of his adviser, the student lists the courses for which he is registered during the present quarter and those he plans to take during each successive quarter. If he has requirements to be met, the specific courses must be listed on the application; elective courses may be entered as "electives, so many credits," without listing each specific course.

The signature of the department head or of an authorized faculty adviser must appear on the application in the space provided for "major professor." *A student in the College of Arts and Sciences* does not obtain his Dean's signature, but leaves the application for a degree along with the diploma card at the Registrar's Office after his adviser has signed it. The application is first approved by the Registrar; then it is sent to the Dean of the College for his signature. He returns it to the Registrar's Office for filing. *A student in any other college* leaves his application at his dean's office for his signature after obtaining the adviser's signature.

Upon the approval of the application, one copy is mailed to the student, one sent to his department or college office, and the third is retained in the Registrar's Office. Any required course listed on the approved application cannot be changed without submitting a petition for graduation properly signed by the department head. The petition form may be obtained at the Registrar's Office, or from the advisory office.

If the application is not approved, the Registrar's Office notifies the student of his deficiency so that he may make the necessary adjustment and re-submit his application.

Petitions

Waivers of college or all-University graduation requirements are obtained only by petitioning the college graduation committee, which then passes the petition on to the University Graduation Committee, if an all-University requirement is involved. These petitions are obtained from the Registrar's Office, or the advisory office, and should be filed with the application for degree or as soon as possible after the need arises. The University Graduation Committee meets only once each quarter; petitions should be filed as early in the quarter as possible. Directions for completing and obtaining the necessary signatures will be given at the time the petition form is handed to the student.

An exemption from an all-University graduation requirement which is granted by the University Graduation Committee shall be void at the end of two calendar

years from the date such exemption is granted if all degree requirements have not been completed within that period.

Third- and Fourth-Year Military Training Courses

Some credits earned in third- and fourth-year military training may be counted in the basic 180 credits required for graduation if approved by the student's school or college.

Physical Education Activity

Physical education credits may be applied toward the basic 180 required credits subject to the limitation of the student's College.

Graduation Requirements for ROTC Students

Students accepted for the third- and fourth-year advanced ROTC program must, as a prerequisite for graduation from the University, complete the advanced program unless excused or dismissed from this requirement by regulations prescribed by the Secretary of the Army, the Navy, or the Air Force, whoever has the authority in the individual case.

Advanced Degrees

Information on and requirements for master's and doctor's degrees can be found in the *Graduate Study* section of this catalog.

Teaching Certificates

Persons seeking certification at the University of Washington must have been admitted to a baccalaureate degree program or as a fifth-year or graduate student at the University of Washington. Requirements for teaching certificates shall be those prescribed by the College of Education at the time the certificate is to be granted.

Provisional Certificate

SPECIFIC REQUIREMENTS

Students expecting to apply for a Provisional Certificate should check immediately upon their arrival on the campus with the College of Education, 207 Miller Hall, for specific requirements. Questions concerning these requirements should be taken to the advisory office of the College of Education in 207 Miller Hall for clarification.

APPLICATIONS

Applications for all certificates should be made at the beginning of the senior year along with application for the bachelor's degree. Application forms and directions for completing them may be obtained at 207 Miller Hall.

Standard Certificates

PETITIONS

All fifth-year students working toward the Standard Certificate, the Standard General Certificate, the Standard Elementary Certificate, or the Standard Secondary Certificate should contact an adviser at 207 Miller Hall *their first quarter* and make the appropriate petition for this certificate.

COURSE APPROVAL

All candidates for the Standard General Certificate must consult an adviser at 207 Miller Hall each quarter to obtain approval on all courses before proceeding to Sections to complete registration.

COMMENCEMENT

Formal Commencement exercises shall be held only at the close of the Spring Quarter. Diplomas shall be issued after the end of each quarter to candidates who have completed graduation requirements.

June Commencement Exercises

Instruction to Participants

During April of each year a booklet of specific instructions is sent to all those entitled to participate in the coming Commencement exercises in June. Participants should follow instructions exactly and return any enclosed form by the deadline requested. Also, they should observe the directions for reserving caps and gowns.

Eligibility for Participation

BACHELOR'S DEGREES

All who earned bachelor's degrees the preceding December or March or who are candidates for degrees in June or the coming August are entitled to participate in the exercises. Only the names of those who received degrees the preceding August, December, or March, and the candidates in June are listed in the Commencement program. The names of candidates for bachelor's degrees who have been accepted for graduation the coming August will not appear in the program.

GRADUATE DEGREES

All Candidates of the Graduate School for master's and doctor's degrees in June and those to whom degrees were granted the preceding August, December, and March are urged to be present. Only those Candidates who have actually completed their requirements during the year are eligible to participate.

MEDICAL AND DENTAL DEGREES

All candidates for doctor's degrees in June in the Schools of Medicine and Dentistry are required to be present in person unless excused by their respective deans.

Graduation Announcements

The University Book Store handles official graduation announcements of the Senior Class.

Diploma Distribution

Diplomas are ready about six weeks after the end of the quarter in which they are earned. Recipients are notified as soon as the diplomas are ready for distribution at the Registrar's Office. Upon request, the diploma will be mailed to the student.

TRANSCRIPTS

University of Washington Transcripts

Official copies of student academic records at the University of Washington which bear the official seal of the University and the signature of the Registrar are known as transcripts.

Charges

A charge of \$1.00, payable to the cashier in advance, is made for each transcript. Grade sheets are 50 cents. Typewritten title transcripts for all records of students entering the University prior to Autumn Quarter, 1929, are \$2.00 for each original copy.

Transcripts from Other Schools

Transcripts covering a student's previous secondary and college education which have been submitted to the University as a requirement for admission become part of the official file and cannot be returned to the student. Any student desiring transcripts of his work earned elsewhere must order official transcripts from the institutions where the work was taken. The University of Washington does not issue or certify copies of transcripts from other institutions.

FEES AND CHARGES

Tuition, special fees, rentals, and service charges are payable in United States dollars upon demand.

New and former students are required to confirm their intention to enroll by making an advance payment of tuition and fees in the amount of \$50.00. The balance of tuition and fees will be due approximately the third week of the quarter; at this time, students who wish to continue and have a guaranteed place must also make a \$50.00 advance payment for the following quarter.

The advance fee payment is not transferable to another person or quarter and is not generally refundable.

Tuition

The University reserves the right to change all fees without prior notice.



There is no additional fee for nonresident students during the Summer Quarter (except for students in the School of Dentistry and the School of Medicine).

Quarterly Tuition and Fee Rates

Effective Autumn Quarter 1971

<i>Undergraduate</i>	<i>Resident</i>	<i>Nonresident</i>
Full fee (more than 6 credits)	\$165	\$527
Six (6) credits or less:		
Minimum (first 2 credits)	\$ 50	\$147
Each additional credit	\$ 23	\$ 76

Graduate and Law

Full fee (more than 6 credits)	\$185	\$547
Six (6) credits or less:		
Minimum (first 2 credits)	\$ 70	\$167
Each additional credit	\$ 23	\$ 76

Medical and Dental

Full fee (more than 12 credits)	\$257	\$613
Twelve (12) credits or less:		
Minimum (first 2 credits)	\$147	\$250
Each additional credit	\$ 10	\$ 33

It is anticipated that the quarterly tuition and fee rates will be increased effective Autumn Quarter 1972 as follows:

	<i>Resident</i>	<i>Nonresident</i>
Undergraduate	\$188	\$527
Graduate and Law	\$208	\$547
Medical and Dental	\$280	\$613

Fee schedules for resident and nonresident students apply to the academic year (Autumn, Winter, and Spring Quarters). Summer Quarter fees are listed in the Summer Quarter Bulletin.

World War I or II Veterans

Under certain conditions a veteran of World War I or II who is not eligible for Veterans' Administration benefits is fully or partly exempt from tuition charges. A special exemption program is available for "resident" Vietnam veterans.

Information concerning these exemptions may be obtained from the campus Office of Veteran Affairs.

Auditors. There is no reduction in fees for auditors.

On-Leave Registration Fee. This fee of \$5.00, charged graduate students only, provides for a maximum on-leave registration period of four successive academic quarters or any part thereof, and is not refundable.

Miscellaneous Charges. A registration service charge of \$15.00 is assessed those students who are granted per-

mission to register after the last scheduled day of registration. Students who must reregister as a result of a cancellation must also pay a \$15.00 fee. Waiver or refund of this service charge is made only at the discretion of the Registration Appeal Board.

A charge of \$5.00 is made for each change of registration or change of section, or number of changes which are made simultaneously after the official change of program period.

Additional Fees. The following courses require the payment of a fee in addition to tuition: Physical Education Activity quarterly fees—bowling, \$5.00; canoeing, \$3.00; golf instruction, \$5.00.

Athletic Admission Fee. A ticket which admits its owner to all athletic events during the quarter or quarters covered: Autumn, Winter, and Spring Quarters, \$10.00; Winter and Spring Quarters, \$5.00.

Publication Binding Fee. All doctoral candidates pay a \$25.00 publication fee. This fee covers the binding of manuscript copies for the University Library and the microfilmed publication of the doctoral dissertation in full.

Certificate Fees. The fee for a certificate for postgraduate work in dentistry is \$5.00. The fee for a teaching certificate is \$5.00, and does not include a legal registration fee of \$1.00, which must be paid to the county school superintendent who first registers the certificate.

Transcript Fee. A charge of \$1.00, payable in advance, is made for each mechanically reproduced transcript. Grade sheets (unofficial) are 50 cents per copy. Type-written title transcripts for all records of students entering prior to Autumn Quarter, 1929, are \$2.00 per copy.

Replacement Fee. Duplicate diploma (with paper folder) \$5.00; teaching certificate (typed copy) \$1.00; replacement photo-identification card \$5.00.

Medical School Filing Fee. A fee of \$10.00 is charged a nonresident student for filing an application for admission to the School of Medicine.

Foreign Language Local Examination Fee (All languages except French, German, and Spanish). The fee for the foreign language examination is \$10.00.

Credit by Examination Fee. In order to obtain credit for independent study, students may take an examination prepared by the department concerned. The fee is \$25.00 per course. Proper forms must be obtained from the Office of the Registrar.

Graduate Admission Application Fee. A fee of \$10.00 (payable in United States dollars) must accompany each

application for admission to the Graduate School as a regular graduate student or as a visiting graduate student. The fee is not refundable nor may it be credited against any other fee charged by the University.

Office of School and College Placement Fee

Registration Fee (for alumni only;
no registration fee for students) \$5.00 annually

Employment Opportunity Notification

Mail Service Fee (for alumni) \$10.00 annually

Confidential Credential Fee

(sold in sets of five only) \$5.00 per set

Students First set of five credentials free

Alumni \$5.00 per set of five credentials

Certification of Credits from Unaccredited Schools Fee.

Credits earned after high school graduation and based on credentials from unaccredited schools offering specialized instruction, or from schools of unknown standing, are accepted only after certification by the department examiner, the executive officer of the department, the dean of the college or school concerned, and the Registrar. Students seeking such certification must obtain the proper forms in the Office of Undergraduate Admissions and must pay a fee of \$5.00.

Parking Fees—Student's Quarterly Permits

Residence hall lots \$24.00

Evening classes \$9.00

For motorcycles and scooters \$5.00

Daily Rate: Urban Renewal lots \$.25

Montlake lots: AA and BB \$.25

CC and DD \$.10

Washington Pre-College Testing Program. A fee of \$7.00 is charged those students who have not previously taken this grade-prediction test and who enter the University with fewer than 45 credits.

Laboratory Pre-School Fee. Fees for children in the Laboratory Pre-School are \$5.00 for all-day care. Half-day care is also available.

Deposits and Rentals

Breakage Ticket Deposit. In certain laboratory courses a breakage ticket is required to pay for laboratory supplies and breakage of equipment. Tickets may be purchased at the Cashier's Office for \$1.00 and \$5.00. Unused sections of breakage tickets may be returned to the Cashier for refunds.

Military Uniform Deposit. A deposit of \$25.00 is required of students in Army and Air Force ROTC, which is refundable when uniform is returned in good condition.

Refund or Cancellation of Fees

All Autumn, Winter, and Spring Quarter fees (except those indicated as not subject to refund/cancellation) will be refunded/cancelled less an enrollment service charge of \$50.00, if complete withdrawal is made prior to the sixth day of instruction; one-half of said fees less a \$25.00 enrollment service charge will be refunded/cancelled if withdrawal is made during the first thirty calendar days, except for Air Force or Army ROTC uniform deposit. At least two weeks must elapse between payment and refund of fees, if payment was made by check. Unless specific instructions are received by the Cashier's Office regarding the fees refunded, all properly authorized refunds will be made to the student involved in the registration.

Students withdrawing under discipline forfeit all rights to the return of any portion of the fees.

Applications for refund may be refused unless they are made during the quarter in which the fees apply.

Refund of ROTC Deposit

From the \$25.00 deposit there is a deduction of \$2.50 for cleaning returned uniforms. The balance, \$22.50, is refunded in full to those students who have completed one year or more of either the basic or the advanced Army ROTC courses when the uniform (with the exception of the shoes) is returned complete and undamaged. The shoes may be retained. Students not completing the first year of either the basic or the advanced courses may purchase the shoes at one half the current sales price, or return them along with the balance of their undamaged uniforms for a refund of \$22.50.

Refund of Advance Payment

Advance payment is not transferable to another person or quarter and is not generally refundable. The advance payment is refundable only in certain cases. Petitions for refund must be filed with the Comptroller's Office, 200 Administration Building.

Residence and Nonresidence

The following statements are only general guidelines. Questions should be addressed to the Residence Classification Office, Schmitz Hall.

1. *Residence* in the state of Washington is not necessarily the equivalent of *domicile*. Domicile connotes a present intention to maintain permanent residence, together with physical presence in the state, whereas residence may be of a temporary nature.

2. In determining a student's intent with regard to his Washington domicile, consideration is given to whether



he is a registered voter of the state of Washington. If the student is a minor, consideration is given to the father's place of voting registration, as the father determines the family's domicile. Voting in person or by absentee ballot in the state of previous domicile is considered inconsistent with and contradictory of intention to establish legal domicile in this state.

3. Temporary residence in the state merely for the purpose of attending school, performing duties while in the military service, or for reasons of health and pleasure is not a basis for the establishment of legal domicile. A person (or his spouse or children) who is employed at least twenty hours per week by a state of Washington higher institution or stationed in the state of Washington as a federal employee or for the performance of military duty may qualify as a resident for the assessment of tuition and fees.

4. Conversely, a domicile in this state is not lost by temporary or occasional absence from the state to attend school, to perform military or other government service, or to pursue health or pleasure.

5. When the parents of a minor are deceased, his domicile follows that of his legally appointed guardian. When the parents are divorced, the minor's domicile is normally determined by that of the parent to whom custody has been awarded by the court.

6. A minor who is married is free to establish his domicile separate and apart from that of his parents.

7. The domicile of a married woman is usually determined by that of her husband.

8. Ordinarily an alien cannot establish residence unless he has applied for a permanent visa.

9. An application for resident status, for any of the foregoing reasons, must be filed with the Residence Classification Office, Schmitz Hall, *prior* to the first day of the quarter in which the applicant expects to qualify for resident tuition and fees.

Veterans and Children of Deceased or Totally Disabled Veterans

Those students who qualify under the applicable federal laws established for their education in institutions of higher learning should consult the Veterans' Division Office of Veteran Affairs. Veterans holding the Vietnam Service Medal (VSM) or the Expeditionary Medal for Service in Vietnam should present their DD214 forms to the Residence Classification Office, Schmitz Hall for complete information.

Veterans with disabilities may have available benefits. They should contact a training officer in the nearest Veterans' Administration office.

STUDENT CONDUCT AND DISCIPLINE

Regulations on student conduct and procedures for student discipline are subject to approval by the Board of Regents on the advice of the President of the University. In the formulation of these regulations and procedures, the President seeks the advice of the University Senate which, in turn, is advised by the Faculty Council on Student Affairs. In order to assure student involvement in the formulation of these regulations, the Faculty Council on Student Affairs looks to a Student-Faculty Joint Council on Student Conduct and Activities to either initiate changes or review changes suggested by others.

Section 1. Standards of Conduct

The University is a public institution having special responsibility for providing instruction in higher education, for advancing knowledge through scholarship and research, and for providing related services to the community. As a center of learning, the University also has the obligation to maintain conditions which are conducive to freedom of inquiry and expression in the maximum degree compatible with the orderly conduct of its functions. For these purposes the University is governed by regulations and procedures which safeguard its functions, and which at the same time protect the rights and freedoms of all members of the academic community.

Admission to the University carries with it the presumption that the student will conduct himself as a responsible member of the academic community. Thus, when he enrolls in the University, the student likewise assumes the obligation to observe standards of conduct which are appropriate to the pursuit of academic goals. Stated in general terms, the student has the obligation to:

(a) Maintain high standards of academic and professional honesty and integrity.

(b) Respect the rights, privileges, and property of other members of the academic community and visitors to the campus, refraining from actions which would interfere with the University functions or endanger the health, safety, or welfare of other persons.

(c) Comply with the rules and regulations of the University and its schools, colleges, and departments.

Specific regulations on student activities shall be in accord with these general standards.

Section 2. Disciplinary Actions

Most disciplinary proceedings will be conducted informally between the student and his academic dean in

matters relating to the student's academic work and between the student and the Office of Student Affairs in other matters. (See below for jurisdiction.) More formal procedures are provided, however, including an impartial hearing before the University Disciplinary Committee; these procedures may be invoked either by the officer dealing with the case or by the student involved. In all situations, whether handled formally or informally, basic standards of fairness will be observed in the determination of (1) the truth or falsity of the charges against the student, (2) whether the alleged misconduct is in fact a violation of University standards of conduct, and, if so, (3) what sanctions should be imposed. The criteria for judging student misconduct shall be the general standards of conduct as stated in Section 1 or as modified and interpreted in accordance with the procedures specified in Section 10.

When questions of mental or physical health are raised in conduct cases, the dean, the Office of Student Affairs, or the University Disciplinary Committee may request the student to appear for examination before two physician-consultants designated by the Dean of the School of Medicine. The physician-consultants may call upon the Student Health Center for any other professional assistance they deem necessary. After examining the student, and consulting with the student's personal physician, the physician-consultants shall make a recommendation to the referring agency as to whether the case should be handled as a disciplinary matter or as a case for medical or other treatment. Decisions based upon these recommendations are the responsibility of the referring agency. Such decisions may be appealed in accordance with the provisions of Section 6 and Section 8, subparagraph (1) that follow.

In the case of student conduct which involves an alleged or proven violation of law, the disciplinary authority of the University will not be used to duplicate the function of civil authorities. Disciplinary action may be taken if the conduct also involves a violation of University standards and the interests of the University community are distinct from those of the civil authorities.

A student who has been judged to have violated University standards of conduct will be subject to disciplinary sanctions, up to and including dismissal from the University for the most serious offenses. In the case of students who are unmarried minors, such sanctions may be reported to parents or legal guardians at the discretion of the officer or agency taking the action except that dismissal of a minor will always be reported to his parents or legal guardians.

Section 3. Disciplinary Sanctions

The following definitions of disciplinary terms have

been established to provide consistency in the application of sanctions:

(a) *Disciplinary Warning*: Notice to a student, either verbally or in writing, that he has been in violation of University rules or regulations or has otherwise failed to meet the University's standards of conduct. Such warnings will include the statement that continuation or repetition of the specific conduct involved or other misconduct will normally result in one of the more serious disciplinary actions described below.

(b) *Reprimand*: Formal action censuring a student for violation of University rules or regulations or for failure to meet the University's standards of conduct. Reprimands are always made in writing to the student by the officer or agency taking action, with copies to the Office of Student Affairs. A reprimand will include the statement that continuation or repetition of the specific conduct involved or other misconduct will normally result in one of the more serious disciplinary actions described below.

(c) *Restitution*: An individual student may be required to make restitution for damage or loss to University or other property and for injury to persons. Failure to make arrangements to pay will result in cancellation of the student's registration and will prevent the student from re-registration.

(d) *Disciplinary Probation*: Formal action placing conditions upon the student's continued attendance for violation of University rules or regulations or other failure to meet the University's standards of conduct. The office placing the student on disciplinary probation will specify, in writing, the period of probation and the conditions, such as limiting the student's participation in extra-curricular activities. Disciplinary probation warns the student that any further misconduct will automatically raise the question of dismissal from the University. Disciplinary probation may be for a specified term or for an indefinite period which may extend to graduation or other termination of the student's enrollment in the University.

(e) *Dismissal*: Termination of student status for violation of University rules or regulations or for failure to meet the University's standards of conduct. Students may be dismissed only with the approval of the President of the University and on the recommendation of the dean of a college or school, the Office of Student Affairs, or the University Disciplinary Committee. Dismissal may be for a stated or for an indefinite period. The notification dismissing a student will indicate, in writing, the term of the dismissal and any special conditions which must be met before readmission. In the



case of an unmarried student who is a minor, a copy of the notification of dismissal will be sent to the parents or the guardian of the student. There is no refund of fees for the quarter in which the action is taken, but fees paid in advance for a subsequent quarter are to be refunded.

Section 4. Jurisdiction

The dean of each college or school, including the Graduate School, is responsible for initiating disciplinary proceedings for infractions of the rules and regulations of that college or school or for misconduct in academic work (cheating, plagiarism, etc.). When a case involving academic misconduct is brought before the University Disciplinary Committee, that committee may consult the initiating dean on rules or standards of academic discipline within that school or college.

The initiation of proceedings for violation of University-wide regulations or for misconduct unrelated to the student's academic work is the responsibility of the Office of Student Affairs, except that jurisdiction may be transferred to the dean of the college or school in which the student is enrolled when the Office of Student Affairs and the dean of that college or school agree that the alleged misconduct bears upon the student's fitness to continue in the college or school.

Misconduct in academic work by a student enrolled in another college or school shall be reported to the dean of the college in which the student is enrolled through the dean of the college offering the course. The dean of the college in which the student is enrolled shall be responsible for taking or initiating appropriate disciplinary action. In the case of a nonmatriculated student, the dean of the college offering the course shall be responsible for taking or initiating appropriate disciplinary action.

The provisions of these sections do not apply to the evaluation of a student's academic performance, including the assignment of grades by instructors. Each college and school provides orderly procedures for the review of grades, if such review is requested by the student. (See Chapter IV, part K, Section 2.) An instructor need not give credit for work which is the product of cheating, plagiarism or other academic misconduct.

However, the lowering of a course grade is not appropriate as a disciplinary sanction; if disciplinary action is warranted by academic misconduct, it will be initiated by the provisions of this section.

An instructor has the authority to exclude a student from any class session in which the student is disorderly

or disruptive. Should such disorderly or disruptive conduct persist, the instructor should report the matter to the dean of the school or college in which the student is enrolled. The dean may initiate disciplinary action as provided in section 5 below.

Special and more detailed rules and regulations regarding conduct in the residence halls may be promulgated by the Director of Student Residences subject to review and approval by the Office of Student Affairs. Authority to impose disciplinary sanctions for the violation of such rules and regulations is delegated to the Director of Student Residences by the Vice President for Student Affairs. Appeals from these actions of the Director will be addressed, in the first instance, to the Vice President for Student Affairs or his designated representatives. The Office of Student Affairs reserves the right to remove students from the residence halls for disciplinary reasons. These actions may be further appealed to the University Disciplinary Committee.

Campus traffic regulations are under the general jurisdiction of the Security Division of the University. The University Traffic Court has jurisdiction to hear and decide cases involving alleged violations of such regulations.

Library borrowing and use regulations, including fines for late return of library materials and repair and replacement costs for damaged or lost materials are under the jurisdiction of the University Library. The Library Advisory Committee has jurisdiction to hear appeals from decisions of the Director of Libraries and to decide cases involving alleged violations of rules relating to borrowing and use of library materials, including fines for late returns and costs of repair or replacement.

Section 5. Disciplinary Authority of Deans and Office of Student Affairs

Except as otherwise provided in Section 4 above, all disciplinary proceedings will be initiated by either the dean of the college or school in which the student is enrolled or by the Office of Student Affairs. The deans and the Vice President for Student Affairs may delegate this responsibility to members of their staffs and to students; they may also establish student or student-faculty courts or hearing bodies to advise or act for them in disciplinary matters.

In order that any informality in disciplinary proceedings not mislead a student as to the seriousness of the matter under consideration, the student involved shall be informed at the initial conference or hearing of the various sanctions that may be involved for misconduct, as listed in Section 3 above.

After considering the evidence in the case and interviewing the student or students involved, the dean or Vice President for Student Affairs, or their duly empowered representatives, courts, or hearing bodies may take any of the following actions:

- (a) Terminate the proceeding, exonerating the student or students.
- (b) Dismiss the case after whatever counseling and advice may be appropriate.
- (c) Impose disciplinary sanctions directly subject to the student's right of appeal described below. The student shall be notified in writing of the action taken except that disciplinary warnings may be given verbally.
- (d) Refer the matter to the University Disciplinary Committee for appropriate action. The student shall be notified in writing that the matter has been referred to the Committee.

In all cases the student shall be advised of his rights by reference to this part of University regulations. Should the student prefer a formal hearing before the University Disciplinary Committee in place of informal or semi-formal hearings by deans, the Office of Student Affairs, or their representatives, he shall so indicate to the initiating officer. In such circumstances, the case shall be referred immediately to the University Disciplinary Committee.

Section 6. Appeals

Any disciplinary action taken by the dean of a college or school or his representative, by the Vice President for Student Affairs or his representatives, or by the University Disciplinary Committee, may be appealed by the student to the next higher hearing body, with the following conditions:

- (a) If a student chooses to make an appeal, the appeal body may base its decision on the record of the proceedings in the initial hearing(s), or, if it chooses, may receive additional evidence, or rehear the case entirely. The appeal body may sustain, reduce, or vacate the penalty imposed by the group or individual originally hearing the case.
- (b) A student who has been disciplined by the deans or by the Office of Student Affairs or their representatives may appeal the case to the University Disciplinary Committee.
- (c) Cases brought before the University Disciplinary Committee, either for initial hearing, or for appeal, may be appealed to the Faculty Appeal Board. (See Section (9).)

(d) All cases in which the sanction imposed by the University Disciplinary Committee is dismissal shall be automatically heard on appeal by the Faculty Appeal Board. Should the Faculty Appeal Board sustain the recommendation of dismissal, approval of the President of the University is required before the sanction takes effect.

A student wishing to appeal to either the Disciplinary Committee or the Faculty Appeal Board shall indicate his intention, in writing, and within five calendar days of the original decision, to the chairman of the group to which the appeal is made.

Section 7. University Disciplinary Committee

A standing University Disciplinary Committee, composed equally of student and faculty representatives, will provide a hearing and will make decisions on all disciplinary cases referred to it by the deans or appealed to it by students who have been disciplined by the deans, or the Office of Student Affairs, or their representatives.

(a) The members of the committee and their terms of office shall be:

(1) A member of the faculty or administration designated by the President of the University, who shall act as non-voting chairman for a period of one year. Reappointment of the chairman is permissible.

(2) Four members of the voting faculty of the University holding the rank of Assistant Professor or higher, and who have been members of the faculty of the University for at least one year. These committee members shall serve for one year terms.

(3) Four full-fee-paying students in good standing to serve for one year terms. The student members will participate in each individual case at the option of the student defendant.

(b) Selection:

(1) Each of the four non-appointive faculty positions of the Disciplinary Committee shall be identified from a panel randomly selected from the eligible faculty in the order they were so selected, except that membership shall be limited to not more than one faculty member from each Senate Group.

(2) Each of the four student positions on the Disciplinary Committee shall be identified from a panel randomly selected from the entire full-time student body and in the order they were selected, except that membership shall include one student from the graduate or



professional class standing and the other three students shall be limited to no more than one student from each class.

(3) Faculty and student panels of adequate size shall be maintained in advance of need, but the names included shall not be disclosed.

(4) Any faculty or student member may be relieved from service for the entire year, for a particular period of time, or after a particular case, by advising the chairman of his or her desire not to serve.

(5) Membership on the Disciplinary Committee terminates with the beginning of the Winter Quarter, except that cases in process shall be continued to decision.

(6) No member of the Disciplinary Committee shall participate in any case in which he is a defendant, complainant, or witness, in which he has a direct or personal interest, or in which he has acted previously in an advisory capacity. A committee member's eligibility to participate in a case may be challenged by parties to the case or by other committee members, but decisions in this regard shall be made by the committee as a whole. Either party may also exercise three peremptory challenges. In a hearing involving more than one charged student, the combined peremptory challenges of all students shall be limited to twelve. All challenges must be exercised at least three days before commencement of the hearing. Replacement shall be made from the appropriate panel, or by presidential appointment in the case of the chairman.

(7) The new panels shall be identified by the outgoing chairman, or by the person designated by the chairman, through random procedures established by the chairman.

(c) Responsibility:

1. It is the responsibility of the chairman of the Disciplinary Committee to insure that all procedural safeguards and guidelines specified in Section 8 below are followed, to decide all procedural questions that arise during or in connection with a hearing, to take whatever steps are necessary during the hearing itself to ensure that the hearing is conducted in a safe and orderly manner, and to inform the student, in writing, of the action taken by the Disciplinary Committee following the hearing.

2. Decisions of the Committee as to whether a student engaged in misconduct and as to the appropriate sanction to be applied, will ordinarily be made on the basis of mutual agreement after discussion of the evidence. For both hearing and deciding, a quorum of

the committee shall be three faculty members and, if student members are participating, three students.

(d) At the conclusion of a term of office the chairman shall prepare for the guidance of subsequent chairmen a report of the year's activities, describing how unusual procedural problems were dealt with. Such reports shall be collected in a chairman's handbook which shall be made available to subsequent chairmen and to any interested parties. Subsequent chairmen shall not be bound to follow the procedures described in the handbook.

Section 8. Procedural Guidelines and Safeguards

The student has a right to a fair and impartial hearing by the University Disciplinary Committee on any charge of misconduct. His failure to appear at or participate in the hearing procedures, however, shall not preclude the Committee from making its findings of fact, conclusions, and decisions as provided below.

(a) The chairman of the University Disciplinary Committee shall give the student notice of the time and place of the hearing, the charges against him, a list of witnesses who will appear, and a description of any documentary or other physical evidence that will be presented at the hearing. This notice shall be given to the student in writing and shall be provided in sufficient time (one week minimum) to permit him to prepare his defense. The notice may be amended at any time prior to the hearing, but, if such amendment is prejudicial to the student's case, the hearing shall be rescheduled to a later date.

(b) The student shall be entitled to hear and examine the evidence against him and be informed of the identity of its sources; he shall be entitled to present evidence in his own behalf and to question witnesses testifying against him as to factual matters.

(c) The burden to prove, by a preponderance of the evidence, that the student did engage in the misconduct charged shall be on the official who initiated the charges. Only those matters presented at the hearing will be considered in determining whether the student engaged in misconduct, but the student's past record of conduct may be taken into account in formulating the committee's recommendations for disciplinary action.

(d) The student may be represented by counsel and/or accompanied by an adviser of his choice.

(e) No one will be required to give self-incriminating evidence.

(f) Hearings conducted by the Committee generally will be held in closed session except when the student

* requests that persons other than those directly involved be invited to attend. When a hearing has been opened to persons other than those directly involved, the Committee shall conduct the hearing in a room which will accommodate a reasonable number of observers. The Committee may exclude from the hearing room any persons who are disruptive of the proceedings, and may limit the number who may attend the hearing in order to afford safety and comfort to the participants and orderliness to the proceedings.

(g) All proceedings of the Committee will be conducted with reasonable dispatch and terminated as soon as fairness to all parties involved permits.

(h) An adequate summary of the proceedings will be kept. As a minimum, such a summary would include a tape recording of testimony.

(i) The student will be provided with a copy of the findings of fact and with the conclusions and the sanctions, if any, to be imposed. He will also be advised of his right to appeal the Committee's decision, within five calendar days, in a written statement to the Faculty Appeal Board.

(j) If there is no appeal to the Faculty Appeal Board, the sanctions shall be in effect at the end of the five day appeal period or at such other time as may be indicated by the Committee. If there is an appeal, imposition of sanctions shall be delayed pending the review provided in the preceding paragraph.

(k) Where, in the judgment of a majority of the Committee, proceedings will be expedited thereby, it may appoint a hearing examiner, who shall be a member of the faculty or a member of the bar, to conduct the hearing provided for in this action. Such examiner will conduct the hearing in accordance with the provisions of this section and any rules of procedure adopted by the Committee, provided that a stenographic record of the hearing will be kept and a transcript of the hearing will be provided to the Committee prior to its rendering its decision. The Committee may, at its option, request the hearing examiner to provide his recommendations as to findings, conclusions and decisions, but such recommendations shall not be binding on the Committee, who shall make its findings, conclusions, and decisions based on the transcript of the hearing. The hearing examiner shall rule on all objections to evidence, but any such ruling may be appealed by an affected party to the Committee for final decision.

(1) Each report of the University Disciplinary Committee shall, upon approval of the student involved, be made available to members of the University community through the Office of Student Affairs.

Section 9. Faculty Appeal Board

The Faculty Appeal Board shall be composed of seven members of the faculty, to be appointed by the Chairman of the Faculty Senate in consultation with the Faculty Council on Student Affairs. One member of the Faculty Appeal Board shall be designated by the Chairman of the Faculty Senate as chairman of the Board. Individual cases may be heard by the entire Board, or by sub-groups of no fewer than three members.

The Faculty Appeal Board shall hear three types of cases:

(a) Appeals by the student defendant from the action of the Disciplinary Committee.

(b) All cases involving recommendations of dismissal.

(c) Appeals by the Vice President for Student Affairs, by a dean, or by their representatives. In the case where it is felt that the Disciplinary Committee has imposed too light a penalty, and where the student himself has not appealed to the Faculty Appeal Board, the dean or the Vice President for Student Affairs, or their representatives, may request an advisory review of the case by the Faculty Appeal Board. If, in the opinion of the Board, the complainant's view is correct, the sanction imposed on the student may not be increased in that specific case, but the Board may request that the issue be discussed by the Joint Council (see below), or that the Faculty Council on Student Affairs prepare additional guidelines for the Disciplinary Committee.

All procedural safeguards detailed in Section 8 for cases before the Disciplinary Committee shall hold for hearings before the Faculty Appeal Board.

Section 10. Student-Faculty Joint Council on Student Conduct and Activities

There shall be a Student-Faculty Joint Council on Student Conduct and Activities, to serve primarily as an advisory group to the Faculty Council on Student Affairs, composed of the following members:

(a) Five undergraduate students to be approved by a majority vote of the Associated Students of the University of Washington Board of Control. A list of nominees shall be prepared each year by the President of the ASUW, with the advice of the Faculty Council on Student Affairs.

(b) Three graduate or advanced professional students to be approved by a majority vote of the Executive Committee of the Graduate and Professional Student Senate. A list of nominees shall be prepared each year by the President of the GPSS, with the advice of the Faculty Council on Student Affairs.



(c) Five members of the faculty to be appointed by the Chairman of the Faculty Senate with the advice of the Faculty Council on Student Affairs. At least one faculty member appointed shall also be a member of the Faculty Council on Student Affairs.

(d) One representative of the Office of Student Affairs to be appointed by the Vice President for Student Affairs.

(e) One representative of the Office of the Provost appointed by the Vice President for Academic Affairs and Provost.

(f) The faculty chairman of the Disciplinary Committee who shall serve *ex officio*, without vote.

Each of the above persons shall serve for one year and may succeed himself, with terms of office to begin on the first day of Spring Quarter.

The Joint Council shall select by majority vote one of its members to serve as chairman for one year. Business of the Joint Council may be conducted informally, except as specified below.

The Joint Council shall maintain a continuous review of the general standards of conduct listed in Section 1 above, other rules and regulations on student activities, and procedures for student discipline as they affect both individual students and student organizations. In the course of this review, the Joint Council may solicit advice from the student body, the faculty and administrative officers of the University, the Disciplinary Committee and the Faculty Appeal Board. When it is felt that there is need for further definition, explication of change in the general standards, rules, regulations, or disciplinary procedures, the Joint Council will proceed to formulate appropriate recommendations which will be forwarded to the Faculty Council on Student Affairs.

The Faculty Council on Student Affairs, after consideration of the recommendations of the Joint Council, may request further study of the issue to the appropriate group or individual. If the proposed change or modification requires Board of Regents' action, the recommendation shall be transmitted, through regular Senate procedures, to the President of the University for action by the Regents. Recommendations which do not require Senate or Regents' action will be transmitted to the appropriate office, agency, or committee after review by the Faculty Council on Student Affairs. Each transmittal specified above will be accompanied by a statement indicating concurrence, suggested modifications, or disapproval.

Section 11. Recording and Maintenance of Records

Records of all disciplinary cases shall be kept by the office taking or initiating the action. Except in proceedings wherein the student is exonerated, all documentary or other physical evidence produced or considered in disciplinary proceedings and all recorded testimony shall be preserved insofar as possible for at least five years. No record of proceedings wherein the student is exonerated, other than the fact of exoneration, shall be maintained in the student's file or other University repository after the date of the student's graduation.

The dean of a college or school shall report to the Office of Student Affairs, in writing, all cases in which disciplinary action is taken. He shall also inform the Registrar of any action affecting a student's official standing in the University.

The Office of Student Affairs shall notify the dean of the college or school in which the student is enrolled of any disciplinary action it takes and also shall notify the Registrar of any action affecting a student's official standing in the University. The Office of Student Affairs shall keep accurate records of all disciplinary actions taken by, or reported by, that office. All disciplinary actions will be entered on the student's record and may be removed at the time of graduation or earlier, at the discretion of the office initiating the action, if special terms and conditions have been met or if other circumstances warrant the removal. The office which initiated the action is responsible for ordering the removal of temporary notations of any disciplinary action on the student's record. A student may petition to that office for removal of such a notation at any time.

Disclosure of information contained in disciplinary records is governed by the statements regarding disclosure of student records appearing under "University Policy on Student Records."

All student records will be treated in a responsible manner and with due regard to the personal nature of the information they contain. The records of students held by the University are the property of the University. The practice of the University Registrar, however, is to honor a student's written request that the transcript of his official academic records not be released or information contained in these records not be disclosed.

The University of Washington reserves 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.

[Basic Part D Revision: S-B 107, June 23, 1969]

ADDENDUM

Emergency Authority of the President of the University

Ordinarily, disciplinary sanctions of any kind will be imposed only after the appropriate informal or formal hearing has taken place, and after the student, if he so chooses, has availed himself of his right of appeal. However, the President of the University and his authorized representative, by virtue of the authority delegated to them by the Board of Regents of the University, under conditions which the President or his authorized representative deems to be an emergency situation, may suspend students from participation in any or all University privileges, pending the application of University disciplinary procedures set forth elsewhere in this chapter, in order to protect the offenders or other members of the University community, or to assure the University's ability to function. In any case in which this provision is invoked, the student or students in question are entitled to an early disciplinary hearing by the University Disciplinary Committee, and the case takes precedence over other business pending before the Committee. [BR, June 27, 1969]

LEAVES OF ABSENCE FROM CLASSES

Students are responsible for maintaining regular attendance at classes or making arrangements satisfactory to their instructors.

Special situations:

1. A leave of absence from the University which involves excuse from classes may be granted by the dean of the college or school in which the student is enrolled, or in a manner to be determined by the dean.
2. Students anticipating absence from classes for participation in ASUW or intercollegiate athletic activities may be provided with certification regarding these absences by the Office of Student Affairs, on the recommendation of the Manager of ASUW Activities or the Director of Athletics. This certification constitutes a request to the instructor that the student be given an opportunity to make up work missed during his absence.

In all cases of absence, with or without leave, students must bear in mind that they are responsible for arranging with their instructors to make up work missed.

TUTORING

No person shall tutor for compensation in a course with which he has any connection as part of the teaching staff.

Approval for tutoring for compensation shall be secured from the head of the department concerned on a form provided, which shall include the names of the student or students and the tutor. If the tutor is of the rank of instructor or higher the approval of the dean concerned shall also be secured.

Students wishing a tutor should apply to the department concerned for names of advanced students qualified to tutor in particular subjects.

STUDENT ACTIVITIES

Eligibility Rules

The following rules regarding eligibility for participation in student activities have been established by the faculty:

Major Activity

To be eligible to participate in any major activity a student shall:

1. Be regularly enrolled and not on academic or disciplinary probation.
2. Be enrolled for a minimum of 10 undergraduate or 7 graduate academic credits exclusive of credits in extension classes, in Independent Study, in basic ROTC courses, and in physical education activity.
3. Not have been declared ineligible by the dean of his college on the grounds that participation in the activity is detrimental to his scholarship.

Minor Activity

To be eligible for any minor activity, a student shall not have been declared ineligible:

1. By the dean of his college on the grounds that participation in the activity is detrimental to his scholarship, or
2. For disciplinary reasons.

The *Handbook for Student Organizations* contains a list of activities designated as "major" for purposes of academic eligibility.

Intercollegiate Athletics

No student shall represent the University of Washington in any athletic contest unless he meets the requirements of the Athletic Association of Western Universities eligibility rules governing intercollegiate athletics. A portion of these rules are that a student must:

1. Be registered in school and carrying at least 12 academic credits the quarter of participation.



2. Progress toward graduation—must have earned 36 degree quarter credits since the commencement of his last previous season of competition in his respective sport.

Additional information on intercollegiate athletic eligibility may be obtained from the Department of Athletics Office, 212 Tubby Graves Building.

Intramural Athletics

There are no academic restrictions on participation in intramural competition.

Student Publications

Only those publications approved by a committee appointed by the President of the University may use the good will of the University in soliciting advertising.

Permission to issue student publications shall be obtained from the President's Office.

The editor of any student publication shall be held responsible for all matter which appears in that publication. A correspondent of any other publication shall be held similarly responsible for all items contributed by him to that publication.

No edition of the *University of Washington Daily* by special editors shall be permitted except by express permission of the Publications Board.

USE OF CAMPUS AND BUILDINGS

General Policy

Because the University of Washington is an educational institution provided and maintained by the people of the state, its campus, buildings, properties, and facilities shall be reserved at all times for those activities which either are related directly to its educational mission or are justifiable on the basis of their contributions to the cultural, social, or economic development of the state.

Limitations of Use

Under the principle stated above, the campus buildings, properties, and facilities of the University, including those of the Associated Students of the University of Washington, may be used only for:

1. The regularly established teaching, research, or public service activities of the University and its departments or related agencies.
2. Cultural, educational, or recreational activities of the students or of the faculty or staff.
3. Short courses, conferences, seminars, or similar events, conducted either in the public service or for the

advancement of specific departmental professional interests, when arranged under the sponsorship of the University or its departments.

4. Public events of a cultural or professional nature brought to the campus at the request of University departments or committees and presented with their active sponsorship and active participation.

5. Activities or programs sponsored by educational institutions, by state or federal agencies, by charitable agencies or civic or community organizations whose activities are of widespread public service and of a character appropriate to the University.

Primary consideration shall be given at all times to activities specifically related to the University's mission, and no arrangements shall be made that may interfere with, or operate to the detriment of, the University's own teaching, research, or public service programs. The use of exterior audio amplifying equipment is not permitted on the campus except for official University functions approved by the Office of the President.

In general, the facilities of the University shall not be rented to, or used by, private or commercial organizations or associations, nor shall the facilities be rented to persons or organizations conducting the programs for private gain.

University facilities may not be used for commercial sales, advertising, or promotional activities except when such activities clearly serve educational objectives (as in display of books of interest to the academic community or in the display or demonstration of technical or research equipment) and when they are conducted under the sponsorship or at the request of a University department or office or of the ASUW.

University facilities may not be used for purposes of political campaigning by or for candidates who have filed for public office except for student-sponsored activities.

Activities of commercial or political nature will not be approved if they involve the use of promotional signs or posters on buildings, trees, walls, or bulletin boards, or the distribution of samples outside rooms or facilities to which access may be granted.

In accordance with the limitations imposed by the Constitution of the State of Washington, the facilities of the University may not be used for purposes of religious worship, exercise, or instruction. Recognized student religious organizations may use the facilities of the University for social, recreational, cultural, and educational purposes, as may any other recognized student groups, subject to the limitations noted above.

University facilities are available to recognized student groups, subject to these general policies and to the rules and regulations of the University governing student affairs.

Noncommercial handbills, leaflets, and similar materials may be distributed by regularly enrolled students, by members of recognized student organizations, and by University personnel in campus areas outside University buildings and in meeting rooms that have been reserved for their use, so long as such distribution does not interfere with or operate to the detriment of the conduct of University affairs or the free flow of traffic. Such materials must bear identification as to publishing agency and distributing organization or individual.

Materials that may be dropped or left lying about must be promptly removed by the persons or organizations responsible for their distribution. Persons and organizations not connected with the University may not distribute handbills and similar materials.

Inquiries concerning the use of University facilities may be directed to the Committee on the Use of University Facilities, 400 Administration Building; telephone (206) 543-2560.

Making Room Reservations

Campus schools, colleges, and departments may make reservations directly with the Room Assignments Department, Registrar's Office.

Student groups desiring room reservations should apply to the Reservations Office, 102 Student Union Building.

Off-campus organizations requesting reservations for the use of University facilities may obtain forms for submission of such requests by calling the Room Assignments Department.

If an assigned room will not be needed, the office that has made room assignments should be notified immediately.



INDEX

A

- Academic advising, 20
- Academic Calendar, 4, 5
- Academic probation, 349
- Academic requirements, 30
- Accelerator and nuclear reactor, 52
- Accident and Health Insurance, 21, 24
- Accounting, 171
- Accreditation, 10
- Activities, 17, 549
- Addresses of students, 339
- Admissibility, 525
- Admission, 25, 337
 - admission, enrollment, and registration, 334
 - application for, 26
 - auditors, 27
 - by Board of Admissions, 26
 - explanation of terms, 337
 - Educational Opportunity Program, 25
 - fifth-year students, 27
 - foreign students, 26
 - freshmen, 26
 - nonmatriculated standing, 27
 - nonresident, 26
 - procedure, 27
 - transfer, 26
 - undergraduate policy, 25
 - veterans and children of veterans, 27, 339, 355
- Admission procedure, 27
 - application, 27
 - health history form, 28
 - housing reservations, 28
 - notification of admission status, 28
 - retention of records, 28
- Advanced credit and placement, 347
- Advertising, *see* Communications
- Adviser, definition of, 336
- Aeronautics and Astronautics, 213
- Aerospace Studies, *see* Reserve Officers Training Corps
- African Studies, 81
- Air Force, 31
- Alcoholism research, 52
- American Indian Studies, 82
- American Studies, 81
- Anesthesiology, 267
- Animal medicine, experimental, 269
- Announcements, 339
- Anthropology, 89
- Application deadlines, 26
- Arabic, *see* Classics
- Arboretum, 52, 236
- Archaeology, *see* Anthropology
- Architecture, 65
- Architecture and Urban Planning, College of, 63
 - facilities and services, 64
 - graduate programs, 65
 - undergraduate programs, 65
- Armed Forces Institute, transfer of credits from, 338
- Armed Forces Training Schools, transfer of credits from, 338
- Army Nurse Corps Candidate Program, 281
- Art, 92
- Art History, 318
- Arts and Sciences, College of, 73
 - admission, 74
 - departmental programs, 89
 - facilities and services, 74
 - distribution list, 76
 - facilities and services, 74
 - general and interdisciplinary studies, 80
 - general information for undergraduates, 77

- graduate programs, 78
- graduation requirements, 75
- honors program, 77
- honors in General Studies, 81
- interdepartmental programs, 80
- premajor programs, 78
- preprofessional programs, 78
- teaching certification, 77
- undergraduate programs, 74
- Asian Arts, Center for, 15, 53
- Asian Languages and Literature, 95
- Asian Law Program, 311
- Associated Nursing Students, 279
- Astronautics, 206
- Astronomy, 100
- Athletics, 17
 - intramural activities, 17
 - intercollegiate athletics, 18
- Atmospheric Sciences, 101
- Auditors, 27, 339

B

- Baccalaureate and College Honors, 29
- Bachelor's degree requirements, 349
- Biochemistry, 103, 267
- Bioengineering, 207, 228, 268
- Biological Structure, 268
- Biology, 82, 103
- Biology Teaching, 320
- Biomathematics, 320
- Biomedical History, 269
- Biophysics, 276
- Black Studies, 82
- Botanical and Drug Plant Gardens, 53
- Botany, 103
- Board of Admissions, 26
- Building Construction, 71

Buildings and campus, use of, 363
 Bulgarian, *see* Slavic Languages and Literature
 Bulletin, definition of, 336
 Bureau of School Service, 177
 Bureau of Testing, 21
 Business Administration, School and Graduate School of, 166
 admission, 170
 career planning and placement, 169
 continuing education, 169
 counseling, 170
 facilities and services, 167
 graduate organizations, 169
 graduate programs, 169
 graduate requirements, 170
 honorary societies and professional clubs, 168
 major areas of study, 171, 173
 minor in Business Administration, 175
 publications, 168
 scholarships, 170
 student activities, 168
 undergraduate organizations, 168
 undergraduate programs, 169
 Business Administration Library, 167
 Business Communications, 171
 Business Economics, 171
 Business, Government, and Society, 171

C

Calendar, 4
 Campus activities, 17
 activities and facilities, 17, 18, 19
 Campus and buildings, use of, 549
 Campus visitation, 28
 Career Planning and Placement, 20
 Cartography, *see* Geography
 Catalan, *see* Romance Languages and Literature
 Center for Asian Arts, 15, 53
 Center for Education in Politics, 53
 Center for Quantitative Science, 235, 245
 Center for Research in Oral Biology, 53
 Center for Studies in Demography and Ecology, 53
 Ceramic Engineering, *see* Mining, Metallurgical, and Ceramic Engineering, 223
 Change of College or Major, 30
 Change of grade, 345
 Change of major, 342
 Change of program, 341, 342
 adding a course, 342
 college, change of, 342
 dropping a course, 342
 major, change of, 342
 service charge, 341
 Charles Lathrop Pack Demonstration Forest, 247
 Chemical Engineering, 214
 Chemistry, 104
 Chicano Studies, 83
 Child Development and Mental Retardation Center, 55
 Chinese, *see* Asian Languages and Literature, 87, 96
 Civil Engineering, 215
 Classes, definition of, 336

Classical Archaeology, *see* Classics
 Classical Linguistics, *see* Classics
 Classics, 107
 CLEP credit, 348
 Clinical Dental Sciences, 256
 College, definition of, 335
 Colleges and Schools, list of, 10
 College Entrance Examination Board, 526
 Commencement, 352
 Communications, 108
 Community Colleges, transfer of credit from, 338
 Community Dentistry, 256
 Community Development, Division of, 60
 Comparative Literature, 83, 111, 322
 Comparative Physiology, 323
 Computation of grade-point averages, 347
 Computer Center, 56
 Computer Science, 323
 laboratory, 56
 Conduct and discipline, 355
 Conjoint Courses, 269
 Continuing Dental Education, 259
 Continuing Education, 14, 59
 Continuing Studies, 61
 Evening Classes, 59
 Extension Services, 60
 Independent Study, 60
 Continuing Studies, Division of, 61
 Counseling Center, 21
 Course, definition of, 335
 graduate, 336
 hyphenated, 335
 lower-division, 335
 undergraduate, 336
 upper-division, 336
 Course Descriptions, *see* Volume II, *General Catalog*
 Credit, definition of, 335
 Credit load, 30
 Credit/No Credit, 344, 345
 Curriculum, definition of, 335
 prescribed and elected, 335
 Cyclotron, 53
 Czech, *see* Slavic Languages and Literature

D

Daily, University of Washington, 19
 Dance, 84, *see also* Physical and Health Education
 Danish, *see* Scandinavian Languages and Literature
 Definitions of Student Classifications, 336
 Definitions of University terms, 334
 Degrees, 13
 dental, law, medicine, 13
 graduate, 13
 undergraduate, 13
 Demography and Ecology, Center for Studies in, 53
 Dental Hygiene, 258
 Dental Hygiene, preprofessional program, 79
 Dentistry, preprofessional program, 79
 Dentistry, School of, 252
 admission, 253
 application procedure, 253

aptitude test, 254
 awards and honors, 254
 conjoint courses, 535
 continuing dental education, 259
 clinical dental sciences, 256
 degrees, 256
 dental aptitude test, 254
 departmental programs, 256
 fees, 255
 fee deposit, 254
 fellowships, 255
 financial aids, 255
 grades, 532
 graduate programs, 259
 honor code, 254
 licensure, 256
 postdoctoral training, 260
 promotion, 254
 research grants, 255
 scholarship rules, 346
 Department, definition of, 335
 Deposits and rentals, 354
 Description of Courses, *see* Vol. II, *General Catalog*
 Developmental Psychology Laboratory, 53
 Discipline, 355
 Dismissal for low scholarship, 349
 Dissertation, 45
 Distribution requirement, Arts and Sciences, 75
 Division, definition of, 335
 Division of Marine Resources, 56
 Doctor's degree, 43
 admission to candidacy, 44
 dissertation and final examination, 45
 preparation and advising, 44
 publication of dissertation, 45
 requirements, 43
 Drama, 111
 on campus, 18
 Drama Arts, 326
 Dropping a course, 343

E

East Asian Studies, 326
 Economics, 113
 Education, College of, 176
 accreditation, 177
 administrative credentials, 200
 admission, 178, 199
 basic proficiencies, 178
 Bureau of School Services, 177
 distribution requirement, 178
 doctoral degree programs for teachers, 200
 facilities and services, 177
 graduate programs, 199
 major and minor programs, 183
 major and minor requirements, 178
 master's degree programs for teachers, 199, 200
 Provisional Certificate, 180
 Standard Certificate, 198
 student activities, 178
 Teacher Certification, 179
 undergraduate programs, 178
 Education in Politics, Center for, 53
 Educational Opportunity Program, 25, 349
 Electrical Engineering, 217



Employment, 22
Endodontics, 256
Engineering, College of, 203
activities, 205
admission, freshman, 205
admission, with advanced standing, 205
bioengineering, 207, 228
college courses, 209, 212
college program, 209
college requirements, 210
continuing education programs, 206
cooperative work-study program, 206
Engineering Advising Center, 209
engineering mechanics, 207
Engineering Research, Office of, 204
facilities and services, 204
financial aids, 205
graduate programs, departmental, 207, 210
graduate programs, interdepartmental or intercollegiate, 207
graduation requirements, 206
honorary and professional societies, 205
Interdisciplinary Engineering Studies Program, 212
Interschool or Intercollege Program, 228
interdisciplinary research facilities, 204
mathematics placement test, 205
ocean engineering, 208
programs of study, 205
publications, 204
requirements, 210
social management of technology, 208
undergraduate programs, 205, 210
Engineering Mechanics, 207
English, 115
Enrollment, 30
Estimate of living expenses, 22, 23
Evening Classes, Division of, 59
Examinations and tests, 28, 338
Expenses, 23, 24
Experimental Animal Medicine, 269
Explanation of terms associated with admission, 337
Extension Services, Division of, 60

F

Facilities, use of, 363
Faculty
description, 9
Family medicine, 270
Far Eastern and Russian Institute, 117
Far Eastern and Slavic Languages and Literature, *see* Asian Languages and Literature, and Slavic Languages and Literature
Fees and expenses, 23, 352
estimated expenses, 23, 24
nonresident students, 23
resident students, 23
resident status for tuition purposes, 23
Fellowships, 22
Fifth-year students, 27
Finance, 171
Aid, 22
Financial Aid, 22, *see also* individual departments for specifics
Financial obligations, 334
Fisheries Club, 233

Fisheries, College of, 230
admission, freshman, 236
admission, graduate, 237
admission, with advanced standing, 237
employment, 237
facilities and services, 231
financial aids, 237
Fisheries Club, 233
Fisheries Research Institute, 233
Fishery Biology, 238
Food Science, 238
graduate programs, 237
graduation requirements, 238
Institute for Food Science and Technology, 234
intercollege programs, 235
Laboratory of Radiation Ecology, 235
Quantitative Science, 235
related activities, 233
undergraduate programs, 237
Washington Cooperative Fishery Unit, 235
Wildlife Science, 236
Fisheries Research Institute, 53, 228
Food Science, 233, 234
Foreign students, 19, 26, *see also* International Services Office
Foreign area studies: East Asia, Inner Asia, Russia and East Europe, and South Asia, 86
Foreign Study, 20
Forensic Studies, 18
Forest Club, 237
Forest Products, Institute of, 53
Forest Resources, College of, 240
biological sciences division, 243
graduate study, 246
instruction, 241
honors program, 245
Institute of Forest Products, 248
Management and Social Sciences, 241
research, 247
scholarships and financial aids, 246
wood and paper division, 244
French, *see* Romance Languages and Literature
Freshman applicants, 26
Freshman English placement test, 28
Friday Harbor Laboratories, 55

G

General information, 9
General and Interdisciplinary Studies, 80, 118
General Studies, 118, *see also* Interdepartmental Programs
Genetics, 118
Geography, 118
Geological Sciences, 120
Geophysics program, 84
Germanic Languages and Literature, 121
Gordon Marckworth Experimental Forest, 248
Governmental Research, Institute of, 53
Grades, 343
Grade-point averages, 347
computation of, 347
Grade reports, 346
to parents, 346

Graduate Degree Programs, Interdisciplinary, *see* Interdisciplinary Graduate Degree Programs
Graduate School, 34
admission, 45, 47
advising, 36, 44
candidates certificate, 43
degree programs, 37
doctoral degree, 43
financial aids, 48
foreign students, 47
graduate programs and degree policies, 36
graduate study, 35
master's degree, 41
master's degrees for teachers, 42
pass/fail grading, 36, 38
registration, 48
research, 52
special facilities, 52
student classifications, 40
supervisory committee, 44
veterans, 48
visiting students, 46, 48
Graduate School of Public Affairs, 316
Graduate Study, Joint Center for, 54
Graduate adviser, 36
Greek, *see* Classics
Gynecology, 273

H

Health Education, *see* Physical and Health Education, 143
Health examination, 28
Health history form, 28
Health Sciences, 243
Health Services, 21
Hebrew, *see* Classics
Henry Art Gallery, 15, 53
Hindi-Urdu, *see* Asian Languages and Literature
History, 123
Home Economics, 125
Honors, 29
Honors List
baccalaureate and college, 29
President's Medal, 30
undergraduate, 29
Hospital, University, 54
Housing, *see* Student Housing, 15
reservations, 28
Humanistic-Social Studies, for Engineers, 219
Humanities, 76, 77
Hungarian, *see* Slavic Languages and Literature, 156
Hyphenated course, definition of, 335

I

Icelandic, *see* Scandinavian Languages and Literature
Independent Study, Division of, 60, 339
Indian, *see* Asian Languages and Literature
Indic, *see* Asian Languages and Literature
Industrial Engineering, 220
Institute, definition of, 335
Institute for Comparative and Foreign Area Studies, 127

Institute for Food Science and Technology, 234
 Institute of Forest Products, 53, 237
 Institute of Governmental Research, 53
 Institute for Sociological Research, 53
 Intercollege Program, *see* Bioengineering, College of Engineering
 Interdepartmental Programs, 80
 Interdisciplinary Graduate Degree Programs, 318
 Art History, 318
 Biology Teaching, 320
 Biomathematics, 320
 Comparative Literature, 322
 Comparative Physiology, 323
 Computer Science, 323
 Drama Arts, 326
 East Asian Studies, 326
 Physiology Psychology, 327
 Public Health Studies Group, 328
 Radiological Sciences, 329
 Russian and East European Studies, 330
 Interdisciplinary Engineering Studies Program, 212
 International Business, 172
 International Services Office, 20
 Italian, *see* Romance Languages and Literature

J

Japanese, *see* Asian Languages and Literature
 Joint Center for Graduate Study, 54
 Journalism, *see* Communications
 Junior colleges, transfer of credit from, 338
 Junior Medal, 29

K

KCTS-TV, 54
 Korean, *see* Asian Languages and Literature
 KUOW-FM, 54

L

Laboratory Medicine, 270
 Laboratory of Radiation Ecology, 53, 229
 Landscape Architecture, 67
 Latin, *see* Classics
 Latin American Studies, 86
 Law Librarianship, 307, 315
 Law Library, 307
 Law Review, *University of Washington*, 308
 Law, School of, 306
 admission, 309
 Asian law, emphasis, 311
 beginning students, 309
 curriculum, 312
 degrees, 310, 311, 312
 facilities and services, 307
 financial aid, 309
 graduate placement, 309
 honor code, 311
 law librarianship program, 315

postgraduate degrees in law, 311
 programs of study, 310
 publications, 308
 seminar program, 313
 student activities, 307
 students in residence, 309
 Summer Quarter, 312
 time demands of law study, 311
 undergraduate education, 307
 Leaves of absence from classes, 362
 Lecture-Concert Series, 17, 60
 Lee Memorial Forest, 248
 Legal Aid Program, 307
 Liberal Arts, *see* General and Interdisciplinary Studies
 Librarianship, School of, 314
 admission, 314
 law librarianship, 315
 library facilities, 315
 Libraries, 14
 Linguistics, 128
 Lower-division courses, definition of, 335

M

Major, definition of, 336
 Management and Organization, 172
 Marine Resources, Division of, 56
 Marketing, 172
 Marketing Club, 168
 Master's degree, 41
 advising, 41
 application for, 42
 examination, 42
 master's degrees for teachers, 42
 nonthesis program, 42
 preparation, 41
 requirements, 41, 42
 thesis, 42
 transfer and extension credit, 41
 master's degrees for teachers, 42
 Materials Engineering, *see* Mining, Metallurgical, and Ceramic Engineering
 Mathematics, 129
 Matriculated, definition of, 336
 Maxillofacial Prosthesis Clinic, 257
 Mechanical Engineering, 221
 Medical examination, 28
 Medicine, 270
 Medicine, preprofessional program, 78
 Medicine, School of, 261
 admission, 262
 assistantships, 264
 continuing medical education, 266
 curriculum, 261
 departmental programs, 265, 267
 fees, extra service charges, rentals, 263
 financial aids, 264
 honors, 264
 medical accreditation and licensure, 266
 postgraduate medical education, 266
 scholarship rules, 346
 traineeships, 264
 Meteorology, *see* Atmospheric Sciences
 Metallurgical Engineering, *see* Mining, Metallurgical, and Ceramic Engineering
 Microbial Genetics, *see* Genetics, *also* Microbiology

Microbiology, 132, 271
 Military Science, 32
 Mining, Metallurgical, and Ceramic Engineering, 222
 Mongolian, *see* Asian Languages and Literature
 Moot court, 308
 Museum, 15, 54
 Music, 133
 on campus, 18

N

Naval Science, 33
 Near Eastern Languages and Literature, 138
 Near Eastern Literature, *see* Classics
 Near Eastern Studies, 86, 96, 326
 Neurological Surgery, 272
 Noncredit classes, 61
 Nonmatriculated, definition of, 336
 Nonmatriculated standing, 27
 Nonresident students, 26
 Nonresident fees, 23
 Nonthesis M.A., 42
 Nonthesis program, 42
 Norwegian, *see* Scandinavian Languages and Literature
 Notification of admission status, 28
 Nuclear Engineering, 226
 Nuclear reactor, 53
 Nursery School, Union Bay Village, 16
 Nursing, School of, 283
 admission, 286
 Bachelor of Science in Nursing, 288
 extra fees and expenses, 286
 facilities and services, 285
 financial assistance, 287
 graduate program, 285, 290
 licensure, 287
 military service programs, 287
 nursing student organizations, 285
 traineeships, assistantships, and fellowships, 288
 undergraduate programs, 288

O

Obstetrics and Gynecology, 273
 Occupational Therapy, preprofessional program, 80, 298
 Ocean Engineering, 208
 Oceanographic Research Vessels, 53
 Oceanography, 139
 Office of Scholarly Journals, 56
 Office of Student Affairs, 20
 Operative Dentistry, *see* Oral Surgery
 Ophthalmology, 273
 Oral Biology, 257
 Oral Biology, Center for Research in, 53
 Oral Diagnosis and Treatment Planning, 256
 Oral Surgery, 257
 Order of the Coif, 297
 Organization for Tropical Studies, 53
 Orthodontics, 257
 Orthopedics, 273
 Otolaryngology, 273



P

Pacific Northwest Bibliographic Center, 54
 Parking, 22
 Pass/Fail, 344
 Pathology, 274
 Pediatrics, 275
 Pedodontics, 257
 Periodontics, 257
 Persian, *see* Classics
 Personnel and Industrial Relations, 169
 Petitions, 351
 Pharmaceutical Chemistry, 295
 Pharmacognosy, 295
 Pharmacy, College of, 292
 curriculum, 294
 facilities, 287, 293
 graduate programs, 294
 honorary and fraternal societies, 293
 licensure, 294
 pharmaceutical chemistry, 295
 pharmacognosy, 295
 pharmacy and pharmacy administration, 296
 undergraduate programs, 294
 Pharmacology, 275
 Pharmacy and Pharmacy Administration, 296
 Philosophy, 142
 Physical and Health Education, 143
 Physical Therapy, 81, 270
 Physics, 144
 Physiology and Biophysics, 276
 Physiology Psychology, 327
 Placement Center, 21
 Polish, *see* Slavic Languages and Literature
 Political Science, 148
 Portuguese, *see* Romance Languages and Literature
 Pre-enrollment examinations and tests, 28
 credit examinations, 29
 freshman English placement test, 29
 foreign language placement examination, 29
 health examination, 29
 mathematics placement test, 28
 Washington Pre-College Testing Program, 28
 Premajor, definition of, 336
 Premajor Programs, 78
 Preprofessional Programs, 78
 Prerequisites, definition of, 335
 Prescribed and elected curricula, definition of, 335
 President's Medal, 30
 Press, University of Washington, 57
 Primate Research Center, 57
 Probation, definition of, 524
 Programs of Study, list of, 10
 Prosthetics-Orthotics, preprofessional programs, 80
 Prosthodontic Laboratory, 257
 Prosthodontics, 257
 Provencal, *see* Romance Languages and Literature
 Provisional certificate, 179, 351
 Psychiatry, 277
 Psychology, 149
 Public Administration Graduate Programs, 316

Public Affairs, Graduate School of, 316
 Institute of Governmental Research, 317
 Master of Public Administration, 316
 mid-career education, 317
 Public Health and Community Medicine, 297
 admission, 301
 facilities and services, 298
 fellowships, 301
 financial aid, 302
 graduate programs, 298
 graduation requirements, 302
 Public Health Studies Group, 328
 Public Relations, *see* Communications
 Publications, student, 19, 363

Q

Quantitative Methods, 172
 Quantitative Science, *see* College of Fisheries/College of Forest Resources
 Quantitative Science, Center for, 235, 245
 Quarter system, *see* Sessions
 Quarterly tuition and fee rates, 353
 Quaternary Research Center, 54.

R

Radiation Ecology, Laboratory of, 53, 229
 Radio broadcast services, 60
 Radiological Sciences, 328
 Radiology, 277
 Radio Station KUOW and KCTS-TV Station, 54
 Radio-Television and Broadcast Journalism, *see* Communications
 Railroad retirement benefits, 22
 Records, student, 28
 retention of, 28
 Recreation Education, *see* Physical and Health Education
 Recreational facilities, 17
 Refund of advance payment, 354
 Refund of fees, 342
 Refund of ROTC deposit, 354
 Regional Primate Research Center, 57
 Registered nurse programs, 284, 290
 Registration, 339
 auditors, 339
 authorizations, 341
 concurrent, 341
 late, 340
 methods of, 339
 special approvals and/or clearances required, 341
 Rehabilitation Medicine, 278
 Reinstatement, 349
 Religion, 88
 Religious activities, 18
 Repeating of courses, 345
 Research and special facilities, 52
 Research, graduate, 51
 Residence (Resident), 336
 Residence and nonresidence, 354
 Resident fees, 23
 Resident status, 23
 Reserve Officers Training Corps Programs, 31

Air Force, 31, 517
 Military Science, 32, 517
 Naval Science, 33, 517
 Residence halls, 15
 Restorative Dentistry, 256
 Retention of records, 28
 Risk and Insurance, 172
 Romance Languages and Literature, 152
 Romance Linguistics, 152
 Romance Literature, 152
 Romanian, *see* Romance/Slavic Languages and Literature
 Room reservations, 364
 Rules and Regulations, 332
 admission, 334, 337
 bachelor degree requirements, 349
 commencement, 352
 conduct and discipline, 355
 fees and charges, 352
 financial obligations, 334
 general University terms, definitions of, 334
 grades, 343
 leaves of absence from class, 362
 registration, 339
 scholarship rules, 345
 student activities, 362
 student classifications, definitions of, 336
 transcripts, 352
 tutoring, 362
 University policy on student records, 332
 use of campus and buildings, 363
 Russian, *see* Russian and East European Studies
 Russian and East European Studies, 330

S

Sanskrit, *see* Asian Languages and Literature
 Scandinavian Languages and Literature, 155
 Scholarly facilities, 52
 Scholarly Journals, Office of, 56
 Scholarship, honor roll, 29
 Scholarship lists, 29
 Scholarship rules, 345
 School, definition of, 335
 School Nurse Certification, 290
 School Service, Bureau of, 177
 Schools and colleges, 10
 Selective Service Information, 22
 Serbo-Croatian, *see* Slavic Languages and Literature
 Service charge, 341
 Sessions, 14
 Short Courses and Conferences, 60
 Slavic Languages and Literature, 156
 Social Management of Technology, 208
 Social Sciences, *see* General Studies
 Social Security and Railroad Retirement Benefits, 22
 Social Welfare, 88
 Social Work, School of, 303
 admission, 303
 courses for nonsocial work majors, 304
 financial aids, 305
 graduate program, 304
 undergraduate programs, 305

Society and Justice, 88
 Sociological Research, Institute for, 53
 Sociology, 159
 Sophomore Medal, 29
 Spanish, *see* Romance Languages and Literature
 Speech, 161
 Speech and Hearing Clinic, 54
 Standard Certificate, 179, 352
 State Board of Education Administrators' Credentials, 200
 Statewide Arts, 60
 Statistics and Probability, 162, *see also* Mathematics, *and* Interdisciplinary Graduate Degree Programs
 Structural Engineering, 215
 Student accident and health insurance, 21, 24
 Student Activities, 19, 362
 Student Affairs, Office of, 20
 Student Bar Association, 307
 Student Conduct and Discipline, 355
 addendum, 362
 Student Directory, ASUW, 18
 Student government, 18
 Student housing, 15
 fraternities, 16
 married student, 16
 men's cooperative, 16
 privately operated accommodations, 16
 religious living units, 16
 reservations, 28
 residence halls, 15
 sororities, 16
 special living groups, 17
 Student identification, 334
 Student insurance, 21, 24
 Student medical examination, 28
 Student organizations, 19
 Student publications, 19, 363
 Student records, University policy on, 521
 Student services, 20
 Study Abroad programs, 19
 Summer Quarter, 14
 Surgery, 281

Swahili, *see* Anthropology
 Swedish, *see* Scandinavian Languages and Literature

T

Tamil, *see* Asian Languages and Literature
 Teacher Certification, 179, 351
 Telecourses, 61
 Television Station KCTS-TV, 54, 61
 Testing, Bureau of, 21
 Tests, *see* Examinations, 28
 Thai, *see* Asian Languages and Literature
 Theaters, 15
 Thesis, 42
 Thomas Burke Memorial Washington State Museum, 15, 54
 Tibetan, *see* Asian Languages and Literature
 Time Schedule, 341
 Transcripts, 352
 from other schools, 352
 from University of Washington, 538
 Transfer applicants, 26
 Transfer credits, 338
 Transfer of Armed Forces Training Schools credit, 338
 Transportation, 173
Trend in Engineering magazine, 204
 Tropical Studies, Organization for, 53
 Tuition, 352
 Turkic, *see* Asian Languages and Literature
 Turkish, *see* Asian Languages and Literature
 Turkish, *see* Classics
 Tutoring, 362

U

Undergraduate Education, 25
 University Book Store, 22
 University facilities, use of, 363

University history, 9
 University Hospital, 54
 University housing, *see* Student Housing
 University Libraries, 14
 University Policy on Student Records, 332
 University Research, 51
 University theaters, 15
 University of Washington Press, 57
 Urban Development, 173
 Urban Planning, 173
 Urology, 282
 Use of campus and buildings, 363

V

Veterans and children of deceased veterans, 27, 339, 355
 Vietnamese, *see* Asian Languages and Literature
 Visiting graduate, 48

W

Washington Cooperative Fishery Unit, 235
 Washington Foresters Alumni Association, 249
 Washington Pre-College Testing Program, 28
 Wildlife Sciences, *see* College of Fisheries and College of Forestry, 235, 243, 245
 Wind Tunnel, 54
 Winnifred Denney Moore Memorial Forest, 248
 Withdrawal from the University, 342
 military, 342
 nonmilitary, 342
 refund of fees, 342

Z

Zoology, 163