

1970

1970-71 Seattle University Bulletin of Information

Seattle University

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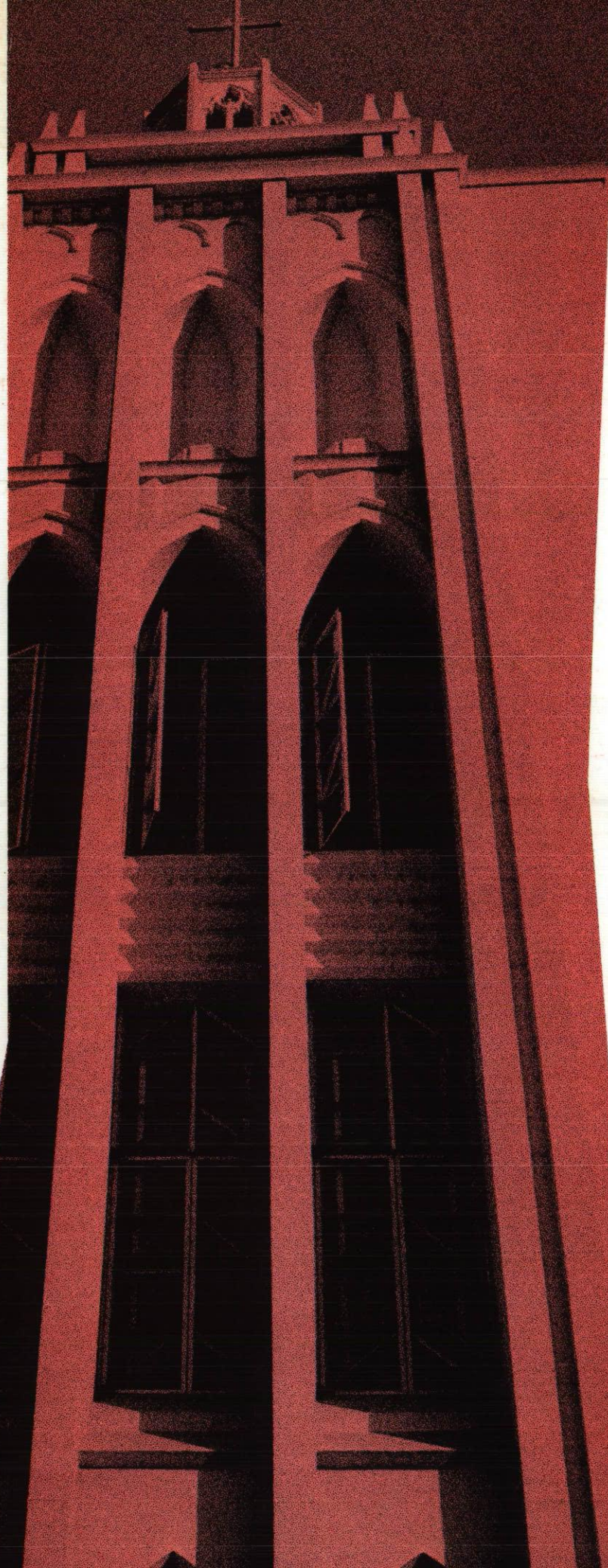
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SEATTLE UNIVERSITY

BULLETIN OF INFORMATION 1970-71





Seattle

University

BULLETIN

OF

INFORMATION

1970-71

VOL. 1

NO. 2

Editor • John R. Talevich

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Contents

bars below are aligned with matching tint on edge of book for easy index.

GENERAL INFORMATION 2-10

Calendars/2, Objectives/5, History/6, Organization, Accreditation/7, Campus/8, Costs/10

STUDENT SERVICES 11-18

Guidance, Testing/12, Spiritual/12, Health/13, Organizations/14, Housing/15, Financial Aid, Scholarships/16, Loans/18, Employment/18

ADMISSION 19-22

Application/20, Examinations, Placement/21, Transfer/22, Foreign Students/22

ACADEMICS 23-30

Core Curriculum/24, Regulations, Terms/25, Credit/27, Grades/28, Registration/29, Degrees and Honors/30

ARTS and SCIENCES 31-82

Biology/33, Chemistry/35, Community Services/39, English/40, Fine Arts/43, General Science/47, History/48, Home Economics/51, Honors/53, Journalism/55, Languages/56, Mathematics/59, Medical Records/62, Medical Technology/63, Military Science/63, Philosophy/66, Physics/69, Political Science/72, Pre dental, Pre medical, Prelaw, Pre-Major/74, Psychology/75, Sociology/77, Theology/79

BUSINESS 83-90

Accounting, Finance, General Business, Management, Marketing/85, Economics/89

EDUCATION 91-102

Teacher Preparation/92, Health and Physical Education/101

ENGINEERING 103-114

Civil/105, Electrical/108, Mechanical/111

NURSING 115-118

GRADUATE SCHOOL 119-120

FACULTY and STAFF 121-133

INDEX 134-135

WHERE TO WRITE 135

CAMPUS GUIDE Inside Back Cover



1970-71

JULY							AUG.						
S	M	T	W	T	F	S	S	M	T	W	T	F	S
			1	2	3	4							1
5	6	7	8	9	10	11	2	3	4	5	6	7	8
12	13	14	15	16	17	18	9	10	11	12	13	14	15
19	20	21	22	23	24	25	16	17	18	19	20	21	22
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13	14	15	16	17	18	19	11	12	13	14	15	16	17	
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15	16	17	18	19	20	21	13	14	15	16	17	18	19	
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29	30						27	28	29	30	31			

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10	11	12	13	14	15	16	14	15	16	17	18	19	20		
17	18	19	20	21	22	23	21	22	23	24	25	26	27		
24	25	26	27	28	29	30	28								
31															

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21	22	23	24	25	26	27	18	19	20	21	22	23	24	
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16	17	18	19	20	21	22	20	21	22	23	24	25	26			
23	24	25	26	27	28	29	27	28	29	30						
30	31															

Summer Quarter 1970

June 22—Monday	Registration
June 23—Tuesday	Classes Begin
June 26—Friday	Last Day to Register
July 17—Friday	First Term Ends
July 20—Monday	Registration—Second Term
July 20—Monday	Classes Begin—Second Term
August 13-14—Thursday, Friday	Final Examinations— Full and Second Terms

Fall Quarter 1970

Sept. 21-22—Monday, Tuesday	Orientation
Sept. 22—Tuesday	Registration—Returning Students
Sept. 23—Wednesday	Registration—New Students
Sept. 24—Thursday	Classes Begin
Sept. 25—Friday	Last Day to Register
Sept. 30—Wednesday	Last Day to Change or Add Classes
Oct. 14—Wednesday	Mass of the Holy Spirit
Oct. 23—Friday	Last Day to Remove Incompletes
Nov. 6—Friday	Last Day to Withdraw with "W"
Nov. 11—Wednesday	Admissions Day—No Classes
Nov. 26-27—Thursday, Friday	Thanksgiving Holiday —No Classes
Dec. 8-11—Tuesday-Friday	Final Examinations

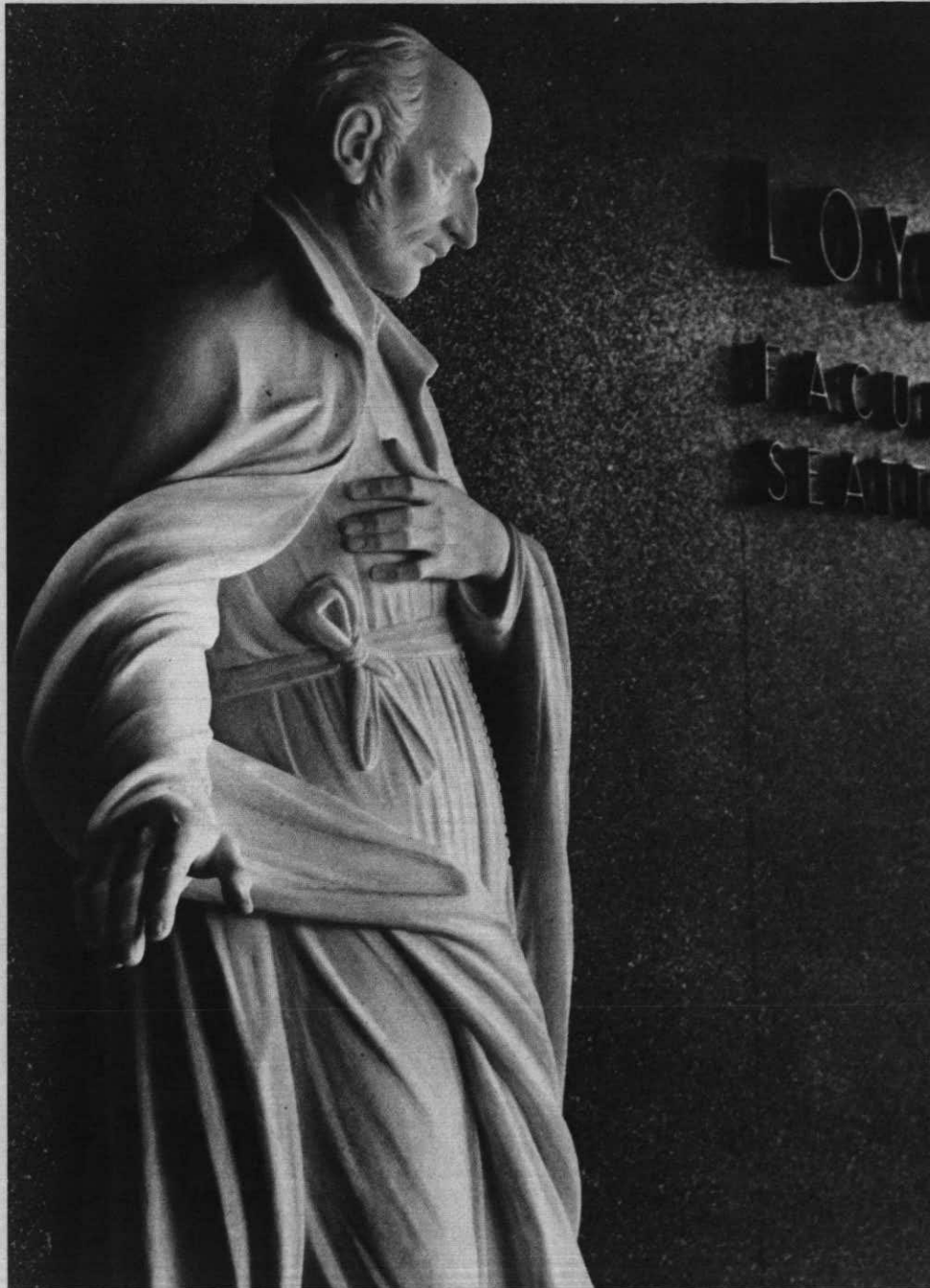
Winter Quarter 1971

Jan. 4—Monday	Registration
Jan. 5—Tuesday	Classes Begin
Jan. 7—Thursday	Last Day to Register
Jan. 11—Monday	Last Day to Change or Add Classes
Jan. 29—Friday	President's Day—No Classes
Feb. 3—Wednesday	Last Day to Remove Incompletes
Feb. 15—Monday	Washington's Birthday—No Classes
Feb. 19—Friday	Last Day to Withdraw with "W"
March 16-19—Tuesday-Friday	Final Examinations

Spring Quarter 1971

March 29—Monday	Registration
March 30—Tuesday	Classes Begin
April 1—Thursday	Last Day to Register
April 5—Monday	Last Day to Change or Add Classes
April 9—Friday	Good Friday—No Classes
April 28—Wednesday	Last Day to Remove Incompletes
May 12—Wednesday	Last Day to Withdraw with "W"
May 31—Monday	Memorial Day—No Classes
June 5—Saturday	Baccalaureate Mass
June 6—Sunday	Commencement
June 8-11—Tuesday-Friday	Final Examinations

**Purpose
and
Scope**



SEATTLE UNIVERSITY, an institution of higher learning, has for its object and purpose:

the conservation, interpretation and transmission of knowledge, ideas and values;

the extension of the frontiers of knowledge by critical and exhaustive investigation or experimentation;

the preparation for some of the professions by thorough and intelligent training in the theory and principles underlying those professions.

As a University, it attains its end not only through the sciences and humanities, including philosophy and theology, but also through its professional schools.

AS A CATHOLIC University operated under the sponsorship and direction of the members of the Society of Jesus:

it affirms its belief in a support of Christian ideals and values;

it affirms its belief in the unity and totality of all human knowledge, whether experimental, speculative, or divinely revealed;

it seeks, by a faculty inspired with the Spirit of Christ and by the creation of a liberal atmosphere inside and outside the classroom, to develop an unbiased, truly liberated and enlightened intelligence in its faculty and student body.

History

Seattle University's development as one of the Pacific Northwest's leading universities is closely interwoven with the history of Seattle and the Pacific Northwest. It is the story of a continuing effort on the part of the University to help meet the educational demands of a burgeoning area.

In 1890, concerned with the problem of providing adequate educational opportunity for the young men of the area, the Rt. Rev. Aegidius Yunger, bishop of the then Nesqually diocese, asked the Jesuit fathers to establish a school in Seattle. Two pioneer priests, the Rev. Victor Garrand, S.J., and the Rev. Adrian Sweere, S.J., were sent by the Rev. Joseph Cataldo, S.J., superior of the Rocky Mountain Province, to answer the bishop's request.

They arrived in Seattle early in 1891 and immediately set about choosing a site for the new school. Upon the advice of some of the area's leading figures, they purchased several lots in the Broadway addition on the eastern edge of the young city. Pending construction of their new building, the fathers were asked to begin classes in St. Francis Hall, at what is now Sixth and Spring Streets in downtown Seattle. They assumed administration of the church and school on September 23, 1891, changing the name of the latter to the School of the Immaculate Conception.

In 1893, the cornerstone of the first building on the present campus at Broadway and Madison Streets was laid. The building, now Science Hall, served both as a school and as the first Immaculate Conception Church in Seattle. The following year, under the direction of the Rev. Conrad Brusten, S.J., and the Rev. Patrick Mahony, S.J., students were first enrolled in an "Academic" course of studies at the high school level. Four years later, the school received its Articles of Incorporation as an institution of higher learning under the corporate title, Seattle College.



The years that followed were years of struggle for the young institution. The frontier atmosphere of the time was not especially conducive to its growth and it was not until 1900 that the collegiate program was begun with a program in "The Humanities," the forerunner of today's College of Arts and Sciences. The following year graduate studies were introduced and in 1907, at the request of former students, evening courses were first offered. The University granted its first bachelors' degrees in the spring of 1909.

Conditions during the First World War led to the suspension of classes from 1918 until 1922. The latter year they were resumed on a seven-acre campus on Interlaken Boulevard which, with two buildings, had been presented to the college by Mr. and Mrs. Thomas C. McHugh. Both college and high school classes were held on the new campus until 1931 when the college returned to its former Broadway and Madison site.

The first women students were admitted in 1933. Seattle University's second academic unit, the School of Education, was added in 1935. In 1937, full accreditation was granted by the Northwest Association of Secondary and Higher Schools. The School of Nursing was established in 1940 and the School of Engineering added in 1941. A fifth major academic unit, the School of Commerce and Finance was initiated in 1945.

On May 28, 1948, full university status was granted by the State of Washington and Seattle College assumed its present title, Seattle University. In 1957, the first College of Sister Formation in the country incorporated in a regular university was established at Seattle University.

Organization

Seattle University is a private, coeducational university conducted by the fathers of the Society of Jesus, popularly known as the Jesuits. It is open to students of all races and denominations and is incorporated under the laws of the State of Washington. One of 28 Jesuit colleges and universities in the United States, it derives its tradition and objectives from the four centuries of academic experience and educational ideals of the Society of Jesus, implemented by nearly two thousand years of Christian tradition and knowledge.

The University is composed of six major academic units:

The College of Arts and Sciences comprises 16 departments. These are: biology, chemistry, English, fine arts, history, home economics, journalism, languages, mathematics, military science, philosophy, physics, political science, psychology, sociology and theology. Program divisions are: community services, honors, medical records, medical technology, pre dental, prelaw, premedical and premajor.

The School of Business offers programs in accounting, economics, finance, general business, management and marketing.

The School of Education offers programs which qualify its students for teaching certificates and principals' credentials issued by the State Department of Public Instruction.

The School of Engineering is comprised of three departments: civil, electrical, and mechanical engineering.

The School of Nursing offers a baccalaureate program in professional nursing which qualifies students for registration through state licensure.

The Graduate School has programs leading to masters' degrees in business, education, engineering, English, history and religious education.

Accreditation

Seattle University enjoys the highest accreditation and its students are accepted for graduate and advanced study by leading colleges and universities in all parts of the country. The University is accredited by:

Northwest Association of Secondary and Higher Schools

National League For Nursing

American Chemical Society

Engineering Council for Professional Development

American Association of Collegiate Schools of Business

National Council for Accreditation of Teacher Education

is approved by:

Washington State Board of Education

American Medical Association

American Society of Clinical Pathologists

American Association of Medical Records Librarians

Washington State Board of Nursing

The University is a member of: American Association of Colleges for Teacher Training, American Association of University Women, American Council on Education, Association of American Colleges, Association of Higher Education, Jesuit Educational Association, National Catholic Education Association, National Commission on Accrediting, Northwest Association of Colleges, Western Interstate Commission for Higher Education.



Campus

The University is situated on a 41-acre site on Seattle's historic First Hill. It is convenient to the city's major educational, cultural and recreational facilities. These include libraries, museums, art galleries, parks and theatres, as well as agencies of municipal, state and federal government, banks, commercial and shopping centers. All are within easy reach of the student seeking the advantages of urban living. The Seattle area is served by major air, rail, highway and steamship facilities.

To meet present and anticipated enrollments, the University has greatly increased its physical plant in the past decade. At the present time, the campus includes 22 classroom and service buildings. Among these are modern classrooms, student and faculty residences and service units.

Major campus structures include the Liberal Arts Building (1945); Student Union (1953); Marycrest Hall (1954); Xavier Hall (1955); William Pigott Building, commerce and education (1957); Thomas J. Bannan Building, physical sciences and engineering (1961); Bellarmine Hall, women's residence (1962); Bookstore Building (1964); Campion Tower, student residence (1965); A. A. Lemieux Library (1966); Connolly Center, physical education (1969).





1970-71 Tuition and Fees

Student tuition and fees expenses at Seattle University are due on the day of registration each quarter. Students unable to meet these obligations may apply for financial assistance. Details of the several plans available are listed on page 17 of this bulletin.

Charges for room and board are payable on the schedule listed under residence charges. The University reserves the right to make adjustments in its charges without prior notice. After a quarter has begun, no changes in financial charges will be made which will be effective during that quarter.

	<i>Tuition</i>
Tuition per quarter (10 to 16 hours)	\$385.00
Over hours (per credit hour)	\$ 15.00
Under 10 hours (per credit hour)	\$ 38.00
Auditor's tuition (per credit hour)	\$ 30.00

Family Tuition Plan

Two or more members of a family living in the same household and dependent upon a common support and who are attending the University concurrently as full-time undergraduate students may apply for a tuition discount. The discount schedule:

No. of family attending	Discount per student
2	12.5%
3	25%
4	31.25%
5	35%
6	37.5%

Regular Fees

General fee (per quarter)	
Full-time students	
(10 or more credit hours)	\$ 44.00
Covers registration, library, building and health center fees; yearbook, student newspaper and student organization allotments; admission to athletic events and specified student productions.	
Part-time students	
(less than 10 credit hours)	\$ 21.00

Occasional Fees (non-refundable)

Application fee—undergraduate and graduate (each paid only once)	\$ 10.00
Matriculation fee (paid once, at first registration)	\$ 10.00
Registration deposit	\$ 25.00
applied to first quarter's tuition if student completes registration	
Change of registration (per change)	\$ 5.00
Late registration (added to tuition and fees)	
\$10 per day—two-day maximum	\$ 20.00
Special examination (per subject) testing	\$ 5.00
Make-up examination (per subject)	\$ 5.00
Credit by examination (per credit hour)	\$ 5.00
Removal of incomplete	\$ 5.00
Withdrawal fee (per course)	\$ 1.00
Washington Pre-College tests (if not taken in high school)	\$ 5.00
Graduation fee (bachelor's degree)	\$ 20.00
(\$15 additional for each additional degree.)	

Graduation fee (master's degree)	\$ 45.00
Graduation fees are due at the time of application for graduation and graduation forms will be released only upon presentation of a receipt for these fees.	
Graduate Record Examination	\$ 7.00
Duplicate official transcript (per copy)	\$ 1.00
Duplicate unofficial transcript (per copy)	\$.50

Laboratory Fees

Art:	
Art 334, 335, 336, 351, 352, 353, 451, 452, 453, 454	\$ 3.00
Biology:	
All laboratory courses	\$ 10.00
Business 210 and 509	\$ 20.00
Chemistry:	
All laboratory courses	\$ 10.00
Education:	
ED 370, 451, 452, 453	\$ 5.00
Engineering:	
CE 496, 497; ME 496, 497	\$ 5.00
CE 221, 323, 333: EE—all even-numbered laboratory courses; ME 425, 426, 428, 477, 481, 484, 485	\$ 10.00
CE 481	\$ 20.00
Cooperative Engineering:	\$ 75.00
Home Economics:	
HE 160, 161, 260, 360	\$ 3.00
HE 270, 370	\$ 5.00
HE 110, 111, 310, 315, 376	\$ 10.00
Mathematics: MT 114, 214	\$ 30.00
Music:	
Mu 110, 111	\$ 35.00
Piano or organ practice room, one hour daily, per quarter	\$ 5.00
Instrument rental for Mu 158, 159, 160 ..	\$ 5.00
Nursing:	
Achievement tests beginning	
6th quarter, per test	\$ 1.00
Laboratory fee N 205, 206 (each)	\$ 8.00
Uniforms (4th quarter) approximate cost ..	\$ 60.00
Physics:	
All laboratory courses	\$ 10.00
Psychology:	
Psy 203, 381, 401, 402	\$ 5.00
Psy 390	\$ 30.00

Refunds

Refunds are based on period from first class day to date of official withdrawal:	
Up to and including 10 class days	80%
Up to and including 15 class days	60%
Up to and including 20 class days	40%
Thereafter	00%
At least 10 class days must elapse between payment and refund of fees.	

Residence Charges

Room and Board per academic year*	\$975.00
Payment Schedule	
Reservation Fee	\$ 70.00
Fall Quarter	\$359.00
Winter Quarter	\$308.00
Spring Quarter	\$238.00

*Includes \$3 annual residence hall activity fee and telephone service \$8 per quarter.



STUDENT SERVICES

The principal function of any university is to provide for its students an atmosphere conducive to intellectual progress—laboratories, library, classrooms and stimulating teachers. However, it is recognized that the total development of the individual is equally important. Consequently certain services have grown and developed at Seattle University which exist for the purpose of serving the spiritual, social, personal and physical needs of the student body. These services of the university personnel described below are aids in making the educational pursuits of the students more profitable and satisfying.

Orientation

To assist new students in becoming better acquainted with the University and familiar with their academic program, the Academic Vice President, assisted by the Dean of Students, the staff of the Counseling and Testing Center and members of the Student Government, sponsors a New Student Orientation Program prior to fall quarter registration. Freshmen students must attend all orientation sessions. Transfer students are responsible for arranging with the Office of Admissions for their participation in any testing program required of all new students.

Advisory System

The deans of the several schools supervise the academic guidance and counseling program of both freshmen students and upper classmen in their school. Through the department chairman, they assign an adviser for each student according to his major or area of concentration. A student is under the academic guidance of the chairman of the department in which the student is taking the most hours.

Personal and Social Guidance

The chaplains and Jesuit faculty members, the Dean of Students and the Dean of Women are also available for counseling on personal matters and to provide formal and informal guidance. Students are free to seek advice from any member of the faculty, lay or Jesuit. Prefects and housemothers in the residence halls are always available to answer questions and to advise. The advising system is not to supplant personal initiative and responsibility. The student is held responsible for making out programs and schedules and choosing courses and degrees.

Counseling and Testing Center

In addition to the academic and personal advising described above, specialized counseling is available at the Counseling and Testing Center by persons trained in clinical psychology. Here tests of scholastic and vocational aptitude, interest and personality are available to students. This service is administered without charge for students enrolled in the University. The Counseling and Testing Center also administers University-wide testing programs for the academic guidance of new students and supervises the National League for Nursing achievement tests for students in the School of Nursing. At the discretion of the individual instructor, students may make up class examinations at the center.

Spiritual Guidance

Seattle University has over 60 Jesuit priests who have dedicated their lives to working with college students. Each of these is a student counselor, and students may feel free to come to them with any problem. The regular training of the Jesuit averages 15 years beyond high school and includes, besides their academic degrees, training in pastoral counseling and guidance. These faculty members are available by appointment or through the informal contact of campus life, since all live on campus.

These guidance facilities constitute a large and rather unique contribution to mental health and adjustment, though usually not designated as such.

Religious Program

All students have the opportunity to make a retreat or a spiritual renewal weekend during the year. There are 12 Masses offered daily on campus for the convenience of students. These are from 6 a.m. to 5 p.m. in the various residence halls and chapels. There are numerous opportunities for confession and the schedule for Masses and confessions is posted at the beginning of each quarter. There are seven Masses each Sunday in the Campion Chapel. The academic year begins with the Mass of the Holy Spirit. There is a Baccalaureate Mass in honor of the seniors at graduation.

Christian Activities Program

The Christian Activities Program involves many different programs which try to provide a practical and direct Christian involvement of the student in the University and civic communities in order to promote the ideals of the University in developing Christian leadership. Some of the organizations are:

The Confraternity of Christian Doctrine, with its mandate from the Archbishop of Seattle, is composed of all students interested in bringing the "Good News" of Christ to the handicapped in the Seattle area: the blind, deaf, mentally and physically retarded children and mental patients.

The Apostleship of Prayer is the official spiritual association of the entire University family.

The Lay Missions Association fosters student interest in the lay missions by providing mission programs for the entire student body.

The Ecumenical Institute aims at fostering a true Christian spirit by means of dialogue between students and members of different faiths.

Social Action Section effects community involvement by a personal encounter between the student and members of the community—such as the tutoring program at St. Peter Claver Center, Lee House for senior citizens, Ruth Home for girls, the Good Shepherd Home and the Neighborhood House.

Student Health Center

All students enrolled at the University for 10 or more credit hours participate in the Student Health Center program. The program entitles students to the use of the Student Health Center located on the campus.

Student Health Insurance

Full-time students and their dependents are eligible to participate in the University's voluntary student health insurance program. The program provides specified accident and sickness benefits. This insurance may be purchased at registration.

Blood Bank

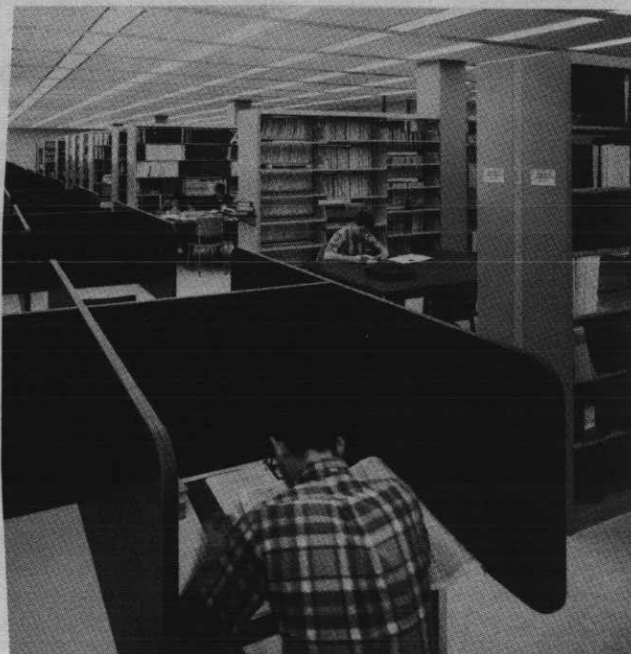
The Seattle University Blood Bank may be drawn upon by registered students for themselves and for their fam-

ilies. All requests for blood must be submitted to the Dean of Students. Blood contributions to the bank are solicited from students during the year.

Athletic Program

Seattle University is a member of the National Collegiate Athletic Association and its athletic policy is governed by the constitution and by-laws of that association. The athletic program is administered by the Director of Athletics and his staff. Major sports at the University are basketball, baseball, cross-country, golf, tennis, crew and soccer.

An intramural athletic program is conducted for both men and women students. The program is administered by the Physical Education department and includes a wide range of group and individual athletic activities.



Organizations

General Organizations

Associated Students of Seattle University—Has general supervision of all campus organizations and extracurricular activities. Direction is exercised through the student senate, activities board, financial committee, and the Office of the Dean of Students.

Associated Women Students—An organization whose purpose is to provide for the welfare of women students, to promote educational, religious, cultural and social interests, to foster cooperation and understanding, and to instill ideals of leadership.

Student Publications

The Aegis—Student yearbook.

The Spectator—Semi-weekly student newspaper.

Fragments—Literary publication.

Student Organizations

Many campus organizations provide the student with an opportunity to develop his talents and to broaden his social and professional background. Included are professional societies, service clubs, student government groups, musical organizations, student publications, scholastic honoraries, religious committees and civic and charitable organizations. A list of authorized organizations may be obtained from the Office of the Dean of Students.

Academic Honoraries

Alpha Sigma Nu—National Jesuit honorary for men recognizing outstanding scholastic attainment, loyalty and service.

Gamma Pi Epsilon—National Jesuit honorary for women. Selection is based upon scholastic excellence.

Silver Scroll—Scholastic honorary for upperclasswomen.

Alpha Epsilon Delta—International premedical honorary.

Beta Gamma Sigma—National business school honorary.

Kappa Delta Pi—National education honorary.

Pi Mu Epsilon—National mathematics honorary.

Sigma Theta Tau—National nursing honorary.

Tau Beta Pi—National engineering honorary.

Service Honoraries

Alpha Phi Omega—A national service fraternity open to male students.

Intercollegiate Knights—A national service fraternity open to men.

Spurs—A women's service organization open to sophomore women who have shown qualities of scholarship, interest in school events and attributes of leadership and personality.

Gamma Sigma Phi—Women's service honorary.

Mu Sigma—Music service honorary.





Housing

All full-time freshmen, sophomores and juniors under 21 years of age are required to live in University housing unless they are married or living with their parents, or unless they have been granted an advance waiver by the Dean of Students or the Dean of Women.

Residence Halls for Women

Bellarmino Hall, opened in 1962, has accommodations for 468 freshmen and sophomore women. It provides study and recreational facilities, a snack bar and a dining hall. Experienced directors are in residence. Jesuit spiritual counselors schedule informal conferences and are readily available for personal help and guidance. Marian Hall, apartment-type residence for upperclass-women students, accommodates 100. It has studio, one-bedroom and two-bedroom apartments. Residents of Marian Hall may use the dining facilities of Bellarmino Hall and Campion Tower. Weekend meals are taken at Campion Tower.

Coeducational Residence Hall

Campion Tower, opened in 1965, is the residence for men and junior women. This 12-story unit provides accommodations for 712 students and is equipped with study, recreational and dining facilities. Men students are supervised by Jesuit prefects.

Application for Housing

Requests for student housing are made through the Dean of Students (men) or through the Dean of Women (women). A seventy-dollar (\$70.00) deposit is required to make reservations. See page 10 for schedule of housing costs.

Cancellation of a reservation must be received at the office of the Dean of Students or Dean of Women *no later than August 1*.

Applicants who do not cancel contracts by the above date forfeit the deposit fee. Residents who terminate their stay in University residence halls before the end of the academic year forfeit the \$70 deposit fee.



The needs of academically qualified students requiring financial aid are met by a combination of various aid forms tailored to the needs of the individual student. The financial package may consist of a scholarship, Educational Opportunity Grant, loan, on-campus job, or a combination of any of these. It will represent the difference between the cost of attending the university and what the student and his family can reasonably be expected to provide. Requests for aid applications should be directed to:

**DIRECTOR OF FINANCIAL AID
SEATTLE UNIVERSITY
SEATTLE, WASHINGTON 98122.**

Approximately 200 scholarships are awarded annually to qualified high school seniors and to students presently attending the University. Awards are based on both scholastic achievement and financial need. A student must have at least a 3.0 (B) academic grade point average. Scholarships range from partial to full tuition, may be for a period of one year or longer, but may not exceed four years. Board, room, fees, textbooks and incidentals are not included. If the scholarship awarded does not meet a student's financial need, other forms of financial aid will be offered. Following is the procedure for applying for a scholarship or for financial aid in general:

1. Submit the Parents' Confidential Statement (PCS) of the College Scholarship Service.
2. Take the Scholastic Aptitude Test (SAT) of the College Entrance Examination Board no later than January of the high school senior year.
3. Apply for admission.

Credentials from high school seniors must be received by the Committee on Scholarships no later than March 1. Students attending the University and students transferring from other colleges may apply each spring for a scholarship for the coming year. Deadline for these students is April 1. Awards will be based on academic record at the end of winter quarter and on financial need as indicated by the Parents' Confidential Statement.

Bache and Company

An annual \$1,000 scholarship awarded to a senior student majoring in economics or finance and banking. Qualifications are academic ability, maturity and a specific interest in investment banking.

The Boeing Company

A total annual grant of \$3,500 to be disbursed by the Scholarship Committee to those scholarship students majoring in engineering, physics, mathematics or business. The usual award is for \$500 per year and is renewable for three additional years if the students maintain a high scholastic standing. An additional grant of \$2,500 annually is given the school.

Crown Zellerbach Foundation

An annual \$600 scholarship granted to a third or fourth year student majoring in physical or social science at the University. An additional fund of \$400 is also awarded the University.

Financial Aid

Financial aid is available to both incoming freshmen and currently enrolled students who are attending on a full-time basis. Forms are available at all high schools in the state of Washington and may also be obtained by writing to Seattle University. The Parents' Confidential Statement (PCS) of the College Scholarship Service must be submitted by all financial aid applicants. Forms are available through school counselors or from the financial aid office.

Scholarships

Farmers New World Life Insurance Company
Scholarship funds will be granted to the University each year on the basis of \$250 a year per each graduate of Seattle University who has been employed by the company for at least four years.

Friedman, Lobe and Block Scholarship
An award of \$100 to a student majoring in accounting. Awarded on the basis of financial need.

Olympic National Life Insurance Company
A grant of \$500 awarded to a junior in the School of Business or the College of Arts and Sciences.

Western Gear Foundation
A total of \$2,000 for engineering scholarships is given annually in honor of the late Philip L. Bannan, Sr. A matching fund of \$2,000 is given the school for operational expenses. These scholarships are renewable for three additional years if the student maintains a high scholastic standing.

Weyerhaeuser Company Foundation
A \$2,000 grant for a fourth year or graduate student in mechanical engineering to conduct a seminar project or thesis on a problem related to the wood products industries.

American Society of Women Accountants
An annual award of \$200 to a junior or senior woman student majoring in accounting. Selection is based upon academic achievement and financial need.

International Nickel Company, Inc.
A \$1,000 grant for a fourth year or graduate student in mechanical engineering to conduct a seminar project or thesis on a problem relating to material science.

Italian Club of Seattle
A fund of \$2,000 sponsored by the Italian Club of Seattle for students whose parents are members of the Italian Club. To be awarded on the basis of academic ability, character and need.

Wyman Youth Trust
An award of \$650 to an entering freshman or upperclassman. Awarded on the basis of academic achievement and financial need. A grant of \$350 is also made to the University.

Albert A. Schafer
A permanent fund of \$25,000 established by the late Mrs. Albert Schafer, the first woman regent of the University, in memory of her husband who was a pioneer Northwest lumberman. To be awarded worthy and deserving high school seniors, or students presently attending the University, on the basis of academic achievement and financial need.

Blume Family

A \$1,000 fund for scholarships to be awarded to students on the basis of need and academic ability.

Handley Memorial

A one-year, partial tuition scholarship established by the late Miss Agnes Handley, former president of the Seattle University Guild, in memory of her brothers.

Agnes Handley Memorial

A tuition scholarship established in memory of the late Miss Agnes Handley. Awarded on the basis of academic achievement and financial need.

Tom Lee Memorial

An annual award of \$250 to a graduate of O'Dea High School chosen by the principal. Sponsored by members of the Lee family in memory of their brother.

Paul Pigott Memorial

A one-year, partial tuition scholarship to be awarded to a high school senior on the basis of academic ability and financial need.

Rosemary McCone Memorial

A full tuition scholarship established in memory of the late Rosemary McCone by a friend. To be awarded to a high school senior on the basis of academic achievement and financial need.

John F. and Elizabeth J. Sullivan Charitable Foundation

An annual \$650 scholarship awarded on the basis of financial need. An additional fund of \$350 is also awarded the school.

Thomas C. McHugh

A one-year tuition scholarship awarded annually to the valedictorian or salutatorian of the graduating class of Seattle Preparatory School in grateful tribute to a generous benefactor.

Founders

Three one-year tuition scholarships are awarded annually in memory of Rev. Victor Garrand, S.J., and Rev. Adrian Sweere, S.J.

Father Beezer Memorial

Alumni and friends of the late Father Gerald Beezer, S.J., have been contributing to a fund to maintain a scholarship in memory of his many years of devoted service.

Regents' Scholarships

A limited number of partial or full tuition scholarships honoring members of the University's Board of Regents are offered to academically top ranking high school graduating seniors.

Professor Emeritus Scholarships

One-year scholarships honoring these retired faculty members are offered: Dr. Walter R. Carmody, Rev. Vincent M. Conway, S.J., Dr. Richard P. Hickey, Gladys M. Hunter, Rev. Francis J. McGarrigle, S.J., Rev. James B. McGoldrick, S.J., Dr. Giuseppe G. Patelli, Carl A. Pitzer, Walter J. Purcell, Rev. Daniel J. Reidy, S.J., Eunice A. Spencer.

National Merit Scholarships

Two four-year scholarships awarded to high school seniors on the basis of the criteria established by National Merit Corporation.

Honors Program

Full or partial tuition scholarships are awarded by the Director of the Honors Program. Renewable for a second year subject to successful completion of the first year.

Lieut. John L. Diehl Scholarship

An annual award of \$100 presented by the Association of the United States Army and Scabbard and Blade to a senior ROTC student on the basis of performance at summer camp.

Fine Arts Talent Scholarships

Partial tuition scholarships are awarded annually by the Fine Arts Department to students of outstanding talent in the areas of art, music and drama. Students interested in auditioning for these scholarships should write to the chairman of the Fine Arts Department.

Miscellaneous

A number of partial and full tuition scholarships are awarded annually as a result of the generosity of friends of the University, including those for special talents.

Army ROTC Scholarship Program

Two and four-year scholarships providing tuition, fees, textbooks and retainer pay of \$50 per month to students desiring a military career. Information about four-year awards may be obtained by writing: Commanding General, Sixth U. S. Army, Attn: AMOPT-RO, Presidio, San Francisco, California. Information on two-year awards, which are made to advanced course students on the basis of their performance in their first two years at the University, may be obtained from the ROTC Department, Seattle University, Seattle, Washington 98122.

Federal Nursing Programs

Information on these programs may be obtained from the Dean of the School of Nursing.

**Army Student Nurse Program
Navy Nurse Corps Candidate Program**

Both programs provide for two years of education on an enlisted reserve status during the junior and senior years. Upon completion of the baccalaureate degree and licensure as registered nurses, participants are required to accept commissions as second lieutenants/ensigns in the Army Nurse Corps/Nurse Corps of the Naval Reserve. Active duty time will be determined on the basis of time spent in the student program.

Federal Traineeship Programs

The Public Health Service Act (Section 306) provides traineeship grants offering tuition, fees and a monthly stipend for full time qualified registered nurse students who are completing their final year of undergraduate study and plan to accept full time public health nursing positions upon graduation.

The Public Health Service Act (Section 307) provides traineeship grants offering tuition, fees and a monthly stipend for full time qualified registered nurse students who are completing their final year of undergraduate study and plan to accept full time supervisory, teaching or head nurse positions upon graduation.

Mental Health Training Program

Traineeship grants are available to selected full time undergraduate students who have an interest in enrolling in a graduate program in psychiatric nursing upon completion of the baccalaureate program. These grants are for the final two years of undergraduate study.

Nursing Scholarship Program

The Health Manpower Act of 1968 authorized a Nursing Scholarship Program to replace the Nursing Educational Opportunity Grant Program. This program provides scholarship awards to students of exceptional financial need who require such financial assistance to pursue the course of study leading to a baccalaureate degree in nursing. The maximum Nursing scholarship which a student may receive is \$1,500, or the amount needed, whichever is the lesser, for a 12-month period. Determination of amount to be awarded is based on the Parents' Confidential Statement.

Several loan plans are available to qualified students who require financial assistance to help meet educational costs. Requests for information and applications for student loans should be made to: DIRECTOR OF FINANCIAL AID, SEATTLE UNIVERSITY, SEATTLE, WASHINGTON 98122.

Student borrowers must be enrolled as full time students during the regular academic year and must have an academic grade point of at least 2.3. They must show need for the loan by submitting the Parents' Confidential Statement. Students admitted on probation are not eligible for loans.

Federally Insured Loan Program

Students may apply for a loan directly to their own bank or other certified lending agency. The bank makes the decision whether or not to make the loan. If the loan is granted, the student receives his money, less a small insurance premium charge. The Federal government pays the interest charge on the loan while the student is in school, and will repay the lender in the event of student default, total disability or death. Nine months after the student leaves school he begins to repay the principal borrowed, plus the interest charge. Principal payments need not be made while the borrower is in the Armed Forces, VISTA or the Peace Corps.

National Defense Student Loan Program

Qualified students are eligible to borrow up to a maximum of \$1,000 in one academic year from funds made available under the National Defense Education Act. Three per cent simple interest and repayment on the principal begins nine months after the student has ceased to be a full-time student. Repayment is quarterly and may be spread over a ten-year period. Borrowers who become full-time teachers in public or private schools or colleges may have 10 per cent of their loan and interest cancelled for each year of teaching up to a maximum of 50 per cent.

Borrowers who elect to teach handicapped children, or to teach in certain schools located in areas of primarily low-income families, may qualify for cancellation of their entire obligation at the rate of 15 per cent per year. Repayment of principal and interest may be deferred up to 36 months each while the borrower is serving full time in the Armed Forces, the Peace Corps or VISTA.

Commercial Tuition Payment Plans

Monthly payment plans are available through two national firms: Education Funds, Inc., and Insured Tuition Plan.

General

Lists of part-time employment opportunities are maintained in the campus Placement Office. Jobs with business firms in the Seattle area are listed as well as those on-campus. Such jobs usually include typing, stenography, bookkeeping, sales and clerical work, child care, housework, gardening, driving, food service, and the more specialized types of work such as laboratory assistant, reader or research assistant. Most are on an hourly wage basis. There is no charge to the student.

Work-Study Program

Seattle University has been selected to participate in the Work-Study Program of the Economic Opportunity Act of 1964. Students are selected on the basis of proved financial need and are given jobs on-campus for periods not to exceed 15 hours per week while

Student Loans

They offer contracts for meeting educational costs from one to four years, with repayment in equal monthly installments. Life insurance on the parent signing, for the duration of the contract, is an important feature. Detailed information is sent to the parents of all new students explaining the various features of these plans.

Miscellaneous Loan Funds

Limited loan funds are available to students through the Ravetti Educational Fund and the Bing Crosby Loan Fund. These loans are reserved for students with deep financial need and provide a long repayment period at low interest.

Seattle University Student Loan Plan

Short-term loans are available at the start of each school quarter for those who want to pay tuition costs out of current income. A modest service charge is made for these loans. Repayment is made directly to the National Bank of Commerce, First Hill Branch, Seattle, Washington, no later than the last day of the quarter in which the loan is granted. Delinquent borrowers are charged at the current interest rate on the amount unpaid.

Nursing Student Loan Program

Full-time students of the School of Nursing who are in need of financial assistance are eligible for a Nursing Student Loan. Determination of need is made by the University, which requires students to submit a Parents' Confidential Statement yearly. The maximum loan an individual may receive in an academic year is \$1,500, or the amount of the student's need, whichever is the lesser. On all loans a uniform interest rate of 3 per cent per year is charged, with the first payment due one year after the borrower ceases to be a full-time student. Repayments are quarterly and may be spread over a 10-year period. Up to 50 per cent of the loan, plus accrued interest, may be cancelled when the borrower is employed full-time as a professional nurse at the rate of 10 per cent a year. Full cancellation is possible for full-time nursing in hospitals in an area determined by the Federal government to have a shortage of nurses, at the rate of 15 per cent per year of full-time nursing.

Educational Opportunity Grants

Non-repayable federal grants are available to undergraduates with demonstrated exceptional financial need in amounts from \$200 to \$1,000. Grants are renewable yearly, providing the need remains. They must be matched by an equal amount from other sources of financial aid, such as scholarship, National Defense Student Loan or College Work-Study job.

Student Employment

school is in session. Special application forms may be obtained by applying to Director of Placement.

Senior Placement Program

Employer representatives visit the campus each year to discuss career opportunities with graduating seniors. Arrangements are made to alert seniors of such visitations and to provide for individual interviews.

Alumni Assistance Program

Employers contact qualified and experienced alumni by listing open positions with the Placement Office. Capable alumni in all disciplines who are unemployed or seeking job betterment can utilize the services of the Placement Office to investigate position referrals, discuss job search techniques or possible career redirection in the light of changing employment opportunities.



ADMISSION

Seattle University selects for admission those students who have demonstrated in their high school studies an ability to achieve a level of academic performance necessary to earn a degree.

To be admitted to the University as a regular student an applicant must meet the following entrance requirements:

Have graduated from an accredited high school.

Have a high school grade point average of 2.5 or above as measured on the 4.0 scale.

Have completed 16 units of college preparatory courses.

Have scores on the College Entrance Examination Board Scholastic Aptitude Test that demonstrate a potential for successful college level academic achievement.

Have satisfactory recommendations from the high school as to character, personality and ability.

Applicants with a grade point average between 2.0 and 2.5 as computed by the University admissions office will be reviewed by a special Board. Applicants with a grade point average below 2.0 will not be admitted to the University on either a regular or probationary status.

Inquiries concerning admission should be addressed to the DIRECTOR OF ADMISSIONS, SEATTLE UNIVERSITY, SEATTLE, WASHINGTON 98122.

Application

In the state of Washington application blanks for those wishing to enter as freshmen may be obtained from high school offices. Out of state applicants may obtain forms by writing to the Director of Admissions. To be considered official, records must be forwarded to the University directly by the high school or registrar of a previous school. High school students seeking admission for the fall quarter may have credentials forwarded by the high school after the appropriate semester.

In making application for admission the candidate must complete the following procedures after completion of the sixth semester.

1. Complete page one of the Washington uniform application for admission and leave the entire form with high school counselor to have pages two and three completed and forwarded directly to the Office of Admissions.
2. Submit an application fee of \$10 to the Office of Admissions. Make remittances payable to Seattle University.
3. Take the Washington Pre-College Test when it is given in candidate's vicinity.
4. Take the CEEB Scholastic Aptitude Test, preferably in December or January. Acceptable test dates are March, May or July.
5. If University housing is desired, immediately upon receipt of housing material submit an advance room deposit of \$70. This deposit is not refundable after August 1.
Requests for residence housing from men should be addressed to the Dean of Students, and those from women to the Dean of Women.
6. Submit the medical form provided by Seattle University after acceptance, completed in accordance with instructions contained in the form, to the Student Health Center.
7. Follow carefully any other instructions which are received.

Notification of acceptance or refusal will begin December 1 and continue as files are completed. However,

students whose records do not give sufficient evidence of the ability to pursue college level work will be notified that a final decision will not be made until the receipt of specified information.

High school students who do not apply before May 1 should delay submitting applications until after graduation. All applications for admission must be received no later than one month before the beginning of each quarter.

Early Decision Plan

Students who select Seattle University as their first-choice college and who have clearly demonstrated a high level of scholastic ability are eligible to apply for admission under this plan. Complete admission credentials should be submitted as soon as possible after the close of the sixth semester, but no later than November 1 of the senior year. Notification will be sent as soon as all credentials are received.

Required Records

Students who have completed satisfactory work at another college or university and wish to continue undergraduate work at Seattle University should, in addition to filing an application for admission, request the registrar of each institution attended beyond high school to send two copies of their transcript record to the Director of Admissions. Failure to furnish previous college records when applying for freshman standing or to supply complete college credentials when applying for advanced standing places students under penalty of immediate dismissal.

Although the fall quarter is the usual and most satisfactory time to begin University studies, admission may be granted to qualified applicants for any of the four quarters of the academic year. All applicants must remit the \$10 application fee to the University.

University admission policy is established by the Academic Council and the Board of Admissions. It is administered by the Academic Vice President through the Director of Admissions and Registrar. This policy and consequent requirements and procedures apply to all applicants. All records submitted by applicants become the property of Seattle University.

In addition to the requirements for admission set forth in this section of the bulletin, reference must be made for additional or distinctive requisites in the individual colleges or schools of the University. This information will be found in the section of the bulletin dealing with the specific college or school.

From Secondary Schools

Each entering freshman must present evidence of that ability, motivation and sound secondary school education on which success in university work is founded.

This evidence is sought

in the quality of his academic record, which must include all credits and grades and a statement that the high school course will be or has been completed with a diploma of graduation;

in the recommendations of his principal or counselors and in test scores and results of the Scholastic Aptitude Test.

Unit Requirements

Admission is granted subject to graduation from an accredited high school and the applicant must present as part of his high school record successful completion of a minimum of 16 units. To count as a unit, a subject must be taught five times a week in periods of not less than 45 minutes for a high school year of 36 weeks. These 16 units must be distributed as follows:

English	3
Mathematics (Algebra, Geometry)	2
History	1
Laboratory Science	1
Electives (approved)	9

A year of algebra or foreign language taken in the seventh or eighth grade is considered equal to one semester of high school work. If the student lacks one of the above required units, he may be permitted in some cases, by way of exception, to enter with provisional standing, but the deficiency must be removed during the freshman year.

A deficiency is considered removed and regular standing is obtained when the student presents evidence of having successfully completed the courses, either at Seattle University, or in approved courses elsewhere.

Two courses of three or more quarter hours each will be considered equal to one high school unit.

No college credit is granted for courses taken to remove deficiencies, except the laboratory science unit.

No application for a degree will be accepted until all entrance deficiencies have been removed.

Entrance Examination

In addition to the high school record, candidates for admission to the Freshman class must take the Scholastic Aptitude Test of the College Entrance Examination Board and have the scores submitted to the Admissions Office of the University. Any student who has earned less than 44 quarter credits or 30 semester credits in another college or university and wishes to be considered for transfer admission to the University will also be required to submit scores from the Scholastic Aptitude Test of the College Entrance Examination Board.

Test application forms and information concerning testing centers and test dates is contained in the CEEB's Bulletin of Information which may be obtained from high school counselors and principals, or by writing to the Educational Testing Service, P.O. Box 1025, Berkeley, California 94701, or P.O. Box 592, Princeton, New Jersey 08540. Students living in the eastern half of the United States should write to the latter address. The fee for the Scholastic Aptitude Test is to be paid to the Educational Testing Service. Scores will be regarded as official only if received from the Educational Testing Service.

Guidance Tests

All entering freshmen students will be required to take the tests of the Washington Pre-College Testing Program. These test results will be used for placement and counseling but not for admission. The tests may

be taken when offered during high school by residents of the state of Washington. During fall quarter and at the beginning of winter and spring quarters, there will be a special administration of these tests at Seattle University for students who are residents of other states and for Washington students who did not take them while in high school. The dates of these tests will be announced by the Counseling and Testing Center.

Medical Examination

When notified of their acceptance for entrance to Seattle University, all candidates will receive a medical examination form which must be completed and signed by a physician and returned to the University Student Health Center before the student will be permitted to register.

Placement Examinations

Placement tests in chemistry and foreign languages are administered by these departments during Freshman Orientation and offer entering freshmen the opportunity to show the extent of their preparation in these areas and enable their department head or adviser to determine the level at which they are ready to begin college work.

Mathematics placement is determined on the basis of results of the Washington Pre-College Tests taken either during the senior year in high school or during Freshman Orientation. For additional mathematics placement information, consult the departmental section of this bulletin.

Advanced Placement

Entering students interested in receiving advanced placement in subject matters other than as set forth above should plan to take the Advanced Placement Tests of the College Entrance Examination Board. Information concerning these tests may be obtained from high school guidance personnel or by writing to Educational Testing Service. The Educational Testing Service will forward test results directly to Seattle University. At the discretion of the dean of the school and the head of the department, a student who has been given advanced placement on the basis of the CEEB Advanced Placement Tests may also be granted college credit.

Admission by Examination

Mature students who give exceptional promise may be admitted without rigid adherence to minimum unit requirements even if they have not graduated from high school or have graduated from a non-accredited high school. Decision as to admission in these cases is reserved to the Academic Vice President and the Board of Admissions. In all cases the student must be directed to the Counseling and Testing Center at Seattle University for guidance and testing.

Probation

Students admitted on probation will be placed in the Pre-Major Program under the guidance of the Pre-Major Director. Probation students must gain regular status by the end of the freshman year or be subject to dismissal from the University.

From Other Universities

A student who has established a satisfactory academic record in another college or university may apply for transfer to Seattle University. However, no transfer student with a grade point average below 2.00 will be considered for admission. Each applicant for transfer must:

1. Submit to the Director of Admissions at Seattle University the application form, application fee and two official copies of transcripts from each college previously attended. One copy of these records will go to the dean of the school or to the department under which the student begins his work.
2. Present a minimum 2.00 academic grade point average for college work attempted prior to transfer. Courses completed at the lowest passing grade are acceptable for transfer, but the dean or department chairman may require that such courses in the major field be repeated.
3. Arrange with the Counseling and Testing Center at Seattle University for such examinations or advising as may be required by the Academic Vice President and the Board of Admissions. Transfer applicants who have completed less than one full year (44 quarter credits or 30 semester credits) at another university must fulfill secondary school unit requirements for admission to the Freshman class and must submit results of the Scholastic Aptitude Test of the College Entrance Examination Board.

Students who wish to transfer to Seattle University after one or two years in attendance at a two-year college are encouraged to apply for admission at the close of a complete academic year.

Students of other colleges or universities who have been placed on probation, suspended, or dismissed will not be considered for admission to Seattle University until at least one year has elapsed. At the end of this period, admission can be granted only by the Academic Vice President and the Board of Admissions. In such cases letters of recommendation will be helpful.

In assessing the student's record for admission, grades in non-credit courses will not be counted. For work done in institutions whose academic standing is unknown or for work with private teachers, admission and advanced credit will be granted only upon examination. Examination to establish credit for such work may be taken after completion of 12 quarter hours in residence. This credit is granted according to conditions set down under Credit by Examination (see page 27).

Advanced Standing

For the purpose of guidance and registration the Registrar will make a tentative evaluation of transfer credits. All evaluations are subject to the approval of the Academic Vice President and the Academic Council.

The following conditions apply to transfer students in granting credits acceptable to Seattle University:

1. Credit transferred from two-year colleges may be applied to University freshmen and sophomore years

only. Transfer of such credit may not exceed 90 quarter hours.

2. For admission with advanced standing no more than three years of academic credit (135 quarter hours) will be accepted toward a bachelor's degree requiring four years of college study. All transfer students must take at least two courses in their major field of study at Seattle University and meet specific philosophy and theology requirements. Consult the departmental sections on philosophy and theology for listing of required courses.
3. Credit earned through extension courses may be accepted if the institution offering such work is a member of the National University Extension Association. Not more than 44 quarter hours of extension credit will be accepted. Credit earned through correspondence shall not exceed 12 quarter hours and must be included in the extension credit total of 44 hours.
4. Credits over 10 years old are not acceptable for transfer.

Foreign Students

Seattle University admits a limited number of students from foreign countries. Specific admission requirements and procedures for all foreign students, except Canadians, are listed on the official foreign student application form. Canadian applicants must meet the admission requirements outlined above for American students and be eligible for admission to the university of their province. The Immigration Form (I-20) necessary to enter the United States is issued to the student upon receipt of the required deposit after he is admitted.

Special Students

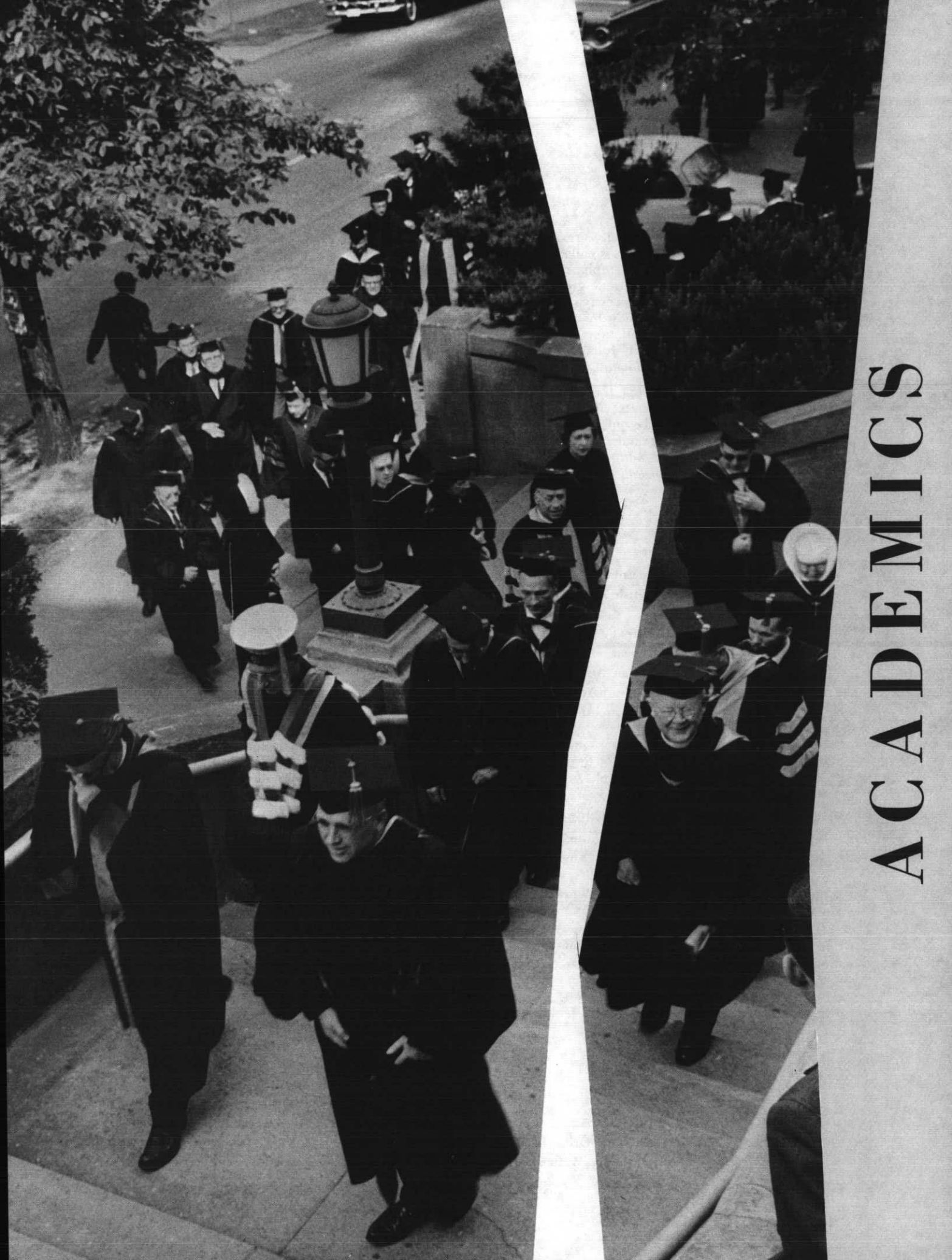
Mature individuals may apply to the Board of Admissions for special standing. A special student may take such regular courses as the dean of his school may determine. A special student may not represent the University, nor is he eligible for a degree. By fulfilling the requirements for admission to the college in which he is enrolled, he may become a regular student.

Transient Students

Admission as a transient student is granted to a student in good standing in any recognized college who meets Seattle University's admission standards and who is taking work to be transferred to his college.

Auditor

Admission as an auditor must be approved by the dean of the school and the instructor of the course. An auditor will not be required to participate in class discussion or laboratory work. Assignments may be made at the discretion of the instructor. A course that has been audited may not be taken for credit.



ACADEMICS

The CORE CURRICULUM

All students at Seattle University are required to complete a basic program of courses called the core curriculum. This program, which emphasizes integration of knowledge, quality teaching and greater student participation in the learning process, was developed after a thorough and extended study by a faculty committee directed to make recommendations for broadening and strengthening the liberal arts foundation which underlies all the University's academic programs.

The core curriculum (except for students in Business and Engineering) consists of 76 to 80 credit hours which include six sequences of courses: four required (56 hours) and two optional out of three (20 to 24 hours). *For specific and additional requirements consult the respective school and departmental sections of this bulletin.*

Required Sequences

ENGLISH SEQUENCE12 hours

- En 100 Freshman English 4 hours
- En 160 Great English Authors I..... 4 hours

and one of the following:

- En 140 World's Great Masters I..... 4 hours
- En 150 World's Great Masters II..... 4 hours
- En 170 Great English Authors II..... 4 hours
- En 180 Great American Authors I..... 4 hours
- En 190 Great American Authors II... 4 hours

HISTORY SEQUENCE8 hours

- Hs 102 Comparative Civilizations II.....4 hours

and one of the following:

- Hs 103 Comparative Civilizations III.4 hours
- Hs 231 Survey of the United States...4 hours
- Hs 251 Survey of Latin America.....4 hours
- Hs 281 Survey of the Modern Eastern World.....4 hours

PHILOSOPHY SEQUENCE20 hours

- Pl 125 Introduction to Ancient Greek Philosophy 4 hours
- Pl 150 Introduction to Medieval Philosophy 4 hours
- Pl 175 Introduction to Modern Philosophy 4 hours
- Pl 225 Philosophy of Man and His Knowledge..... 4 hours
- Pl 250 Ethics 4 hours

THEOLOGY SEQUENCE16 hours

- Th 120 Judaeo-Christian Origins 4 hours
- Th 220 Ancient Christian Writers..... 4 hours

Th 320 Christian Wisdom 4 hours
and one of the following:

- Th 420 Sacramental Life4 hours
- Th 433 Theology of Marriage (Men)4 hours
- Th 434 Theology of Marriage (Women)4 hours
- Th 435 Liturgical Theology4 hours
- Th 443 Teachings of Vatican II.....4 hours
- Th 475 Contemporary Moral Problems4 hours

Students who are not Catholic are required to take either of the following courses and to fill the remaining 12 hours with electives in the humanities or social sciences. They may also elect additional theology courses.

- Th 110 Sources of Judaeo-Christian Tradition and Culture.....4 hours
- Th 120 Judaeo-Christian Origins.....4 hours

Optional Sequences

Of the following three sequences (Mathematics, Science, Social Science), two are required. Generally, those to be followed are determined by the department of the student's major. For these requirements consult the departmental programs in this bulletin.

MATHEMATICS SEQUENCE 8 hours

Normally for non-science majors in Arts and Sciences.

- Mt 170 Fundamental Concepts of Mathematics I..... 4 hours
- Mt 171 Fundamental Concepts of Mathematics II..... 4 hours

Mathematics and science majors must consult with their advisers regarding the courses they substitute for the above program.

SCIENCE SEQUENCE12 hours

Non-science majors who take a science sequence as part of the core curriculum must select the sequence which best complements their high school science courses so that they will receive some formal academic acquaintance (either in high school or college) with both physical science (physics or chemistry) and life science (biology).

- Ch 100 Principles of the Physical Sciences 4 hours
- Bl 101 Life Science I..... 4 hours

and either of the following:

- Ph 100 Modern Physical Science I... 4 hours
- Ph 110 Fundamental Astronomy4 hours

Science majors must consult with their advisers regarding the courses they substitute for the above program.

SOCIAL SCIENCE SEQUENCE.....12 hours

Any three of the following four courses:

- Ec 271 Principles of Economics I.....4 hours
- Pls 160 American National Government 4 hours
- Psy 100 Introductory Psychology 4 hours
- Sc 101 Fundamentals of Sociology I 4 hours

or:

- Ec 271 Principles of Economics I.....4 hours
- Ec 272 Principles of Economics II...4 hours
- Ec 273 American Economic History...4 hours

or:

- Pls 160 American National Government 4 hours
- Pls 200 Comparative Parliamentary Democracies 4 hours
- Pls 214 Government and the Public Welfare 4 hours

or:

- Psy 100 Introductory Psychology 4 hours
- Psy 210 Personality Adjustment4 hours
- Sc 200 Perspectives in Social Psychology 4 hours

or:

- Sc 101 Fundamentals of Sociology I 4 hours

Sc 102 Fundamentals of Sociology II 4 hours

Sc 200 Perspectives in Social Psychology 4 hours

Recommended Sequences

In addition to the 76 to 80 core hours, either 12 hours of language or 12 hours of fine arts are recommended to all students of the University.

LANGUAGE SEQUENCE12 hours

French, German, Spanish, Greek or Latin 101 Language I 4 hours

French, German, Spanish, Greek or Latin 102 Language II 4 hours

French, German, Spanish, Greek or Latin 103 Language III 4 hours

Students who have completed two years of language in high school may meet the language requirement by completing Language 103 plus 8 elective hours.

FINE ARTS SEQUENCE12 hours

FA 101 Art 4 hours

FA 102 Drama 4 hours

FA 103 Music 4 hours

Each student is responsible for informing himself of the academic regulations and requirements set forth in this Bulletin of Information and for revisions of same as posted on campus bulletin boards or in other official publications of the University. Failure to meet the requirements or comply with regulations because of lack of knowledge thereof does not excuse the student from being subject to them. X

A student's program of study must be approved by a member of the faculty, usually the adviser, at registration. However, such approval does not give official sanction to any failure to meet University requirements nor does it free the student of that responsibility necessary to intelligent personal choice.

The Academic Council has discretionary powers for all cases not covered by the rules and regulations listed in this section. The enrollment and graduation of each student, the awarding of academic credits, and the granting of any award or degree are strictly subject to the disciplinary power of the University. The University reserves the right to change any requirement and to ask a student to withdraw at any time.

Academic Terms

ACADEMIC AVERAGE—Computed by the University for each applicant to determine the quality of high school work in academic subjects such as English, algebra, history, and laboratory sciences. Non-academic high school subjects such as music, physical education, and typewriting are excluded when this average is computed.

ACCREDITED—Certified as fulfilling standards set up by regional accrediting agencies. Indicates that course work is acceptable to other colleges or universities.

ADVANCED PLACEMENT—Admission of freshmen to courses beyond the beginning level. Granted to students who pass designated advanced placement tests.

ADVANCED STANDING—Granted to transfer students who have previous college work which is acceptable to Seattle University.

ADVISER—A member of the faculty designated to assist the student in planning his program of study.

AUDITOR—A student who is permitted to register for courses without obtaining college credit.

BACCALAUREATE MASS—Official academic function of Commencement Week required of all graduating seniors.

BASIC RECORD—See transcript.

CERTIFICATION—Granted through the School of Education to graduates who have met State of Washington requirements for teaching in elementary or secondary schools.

CHANGE OF MAJOR—Procedure whereby student declares his intention to change from one subject field into another within the same division (school or college) of the University.

CHANGE OF SCHOOL—Procedure whereby student obtains permission to change from one school of the University into another and officially notifies deans and the Registrar of the change.

CLASS CARDS—Issued to students and collected from them during registration. Used to produce class lists which the instructor uses as official notification that the student is enrolled in his class.

COLLEGE—One of the seven academic administrative divisions of Seattle University, i.e., College of Arts and

Sciences, consisting of the dean, his advisory board, the faculty of the college and the students registered in this division.

CORE CURRICULUM—That body of subject matter common to all programs of study and the foundation of Seattle University's liberal education.

CLASSICAL—One of two types of degree programs offered by the College of Arts and Sciences. The classical degree differs from the non-classical in that it requires 12 hours in Latin or Greek courses numbered 300 to 499.

COMPREHENSIVE EXAMINATION—An examination covering the entire scope of the student's major area of study.

COURSE OF INSTRUCTION—A complete set of lectures, quizzes, recitations, student exercises, laboratory periods, and examinations on a given subject.

COURSE OF STUDY—See program of study.

CREDIT BY EXAMINATION—Procedure to obtain credit for work done in private study or for work not otherwise acceptable to the University.

CREDIT HOUR—Unit of instruction. See quarter hour.

CUMULATIVE GRADE POINT AVERAGE—The quality measurement of each student's university work computed by dividing total quality points by total credits attempted.

CURRICULUM—An established program of study leading toward a degree in a particular subject field.

DEFICIENCY—Lack of credit in a course required for graduation, or lack of credit in subject matter required for entrance.

DEGREE—Awarded by the University upon successful completion of a specific program of study.

DEGREE PROGRAM—See Program of Study.

DEPARTMENT—A division of a school or college of the University consisting of those faculty members who are actively engaged in instruction, administrative or research work in a specific subject field under the direction of a chairman.

ELECTIVE—A subject chosen by the student not demanded by his program of study.

FIELD OF CONCENTRATION—Student's major field. See major.

GRADE POINT AVERAGE—An average computed on the basis of numerical values assigned to the letter grades received by students. To determine this average the quality points assigned to the letter grades are totaled and divided by the total number of credit hours attempted.

GRADUATE STUDENT—One who has been admitted to Graduate School to pursue a specific advanced degree program.

HUMANITIES—Cultural subjects as distinguished from social sciences (history, psychology, or sociology) and physical sciences.

I-20 FORM—United States Immigration Form No. 20 issued by the University to students from foreign countries who have been accepted for admission.

INTERNSHIP—A period of at least one year when a student actually works in a hospital before the degree in medical technology or medical records is awarded.

LOW LIST—A warning list published quarterly of students whose poor academic work in one quarter if not immediately improved will result in probation or dismissal.

MAJOR—The specific field of study selected by a student, generally requiring a minimum of 48 quarter hours.

MATRICULATE—Enrollment at the University for the first time as a regular student to pursue a degree.

MAKE-UP EXAMINATIONS—Special examinations prepared by an instructor for students who for serious reason miss a scheduled examination.

MINOR—The secondary field of concentration selected by a student.

ORIENTATION WEEK—A week preceding fall quarter in which new students are introduced to the University.

PERMANENT RECORD—The University record of all courses for which a student registers.

PLACEMENT TESTS—Tests in a specific field administered to entering students to determine the level of achievement before assigning his college courses.

PRE-MAJOR—The classification of students who enter the University without a specific major.

PREREQUISITE—A required course which must be completed before a student is permitted to register for a more advanced course.

PROBATION—Status resulting from academic performance below the minimum university level.

PROVISIONAL STUDENT—One who is admitted with an entrance requirement unsatisfied.

PROGRAM OF STUDY—The curriculum in a given subject matter field. A series of courses assigned by schools and departments of the University which must be completed by the student before a degree is awarded.

QUALITY POINTS—The numerical values assigned to letter grades. See the section of this bulletin on the grading system.

QUARTER HOUR—The unit of instruction used in computing University graduation requirements. A quarter hour of credit is given for each hour of class per week for a minimum of eleven weeks. A two-hour laboratory period is considered the equivalent of one hour of lecture and/or recitation work, except in the Schools of Engineering and Nursing. To earn four quarter hours of credit a student attends the class four hours each week for eleven weeks.

RATIO STUDIORUM—Traditional plan of studies of the Society of Jesus.

READMISSION—Procedure whereby a student who has not been in attendance for one or more quarters is permitted to register for continued course work.

REGISTRATION—Official enrollment in the University. Process in which student appears in person and selects his courses each quarter.

REGULAR STUDENT—A fully matriculated student pursuing a degree program.

SPECIAL STUDENT—A non-matriculated student taking course work which is not applicable toward a degree until regular standing is achieved.

SCHOOL—An academic and administrative division of the University consisting of a dean, his advisory board, the faculty of the school, and the students registered in the school.

SPECIFIC CURRICULUM—In addition to the core curriculum required of all students, each individual student selects a specific curriculum or field of concentration. These curricula are offered by the component schools of the University according to degree requirements.

TRANSCRIPT—A copy of the student's permanent record. An official transcript is one bearing the University's seal. An unofficial transcript bears no seal and is not acceptable as a genuine copy of a student's record by other universities. Fee for an official transcript is \$1 per copy unless the student has a financial obligation outstanding in which case the fee is the full amount outstanding plus \$1.

TRANSFER CREDIT—Credit awarded to a student for work completed at another college or university.

TRANSFER STUDENT—One who is admitted to Seattle University having previously completed work at another college or university.

UNCLASSIFIED—One who has received his bachelor's degree and is taking additional fifth year college work in any undergraduate area of study; has no specific degree objective, but may be seeking teacher certification.

UNIT OF INSTRUCTION—See Quarter Hour.

WITHDRAWAL—Procedure whereby student notifies the University that he will not complete a course for which he is registered.

Attendance

Any student absent from 15 percent or more of classes or laboratory sessions will be dropped from the class with a failing grade. Absences are recorded from the first scheduled class meeting regardless of the first day of attendance.

Student Classification

Regular undergraduate students of the University are classified as follows:

Freshmen—less than 44 quarter hours of credit completed

Sophomore—at least 44 but less than 90 quarter hours of credit completed

Junior—at least 90 but less than 135 quarter hours of credit completed

Senior—more than 134 quarter hours of credit completed.

Course Numbering System

The course numbering system at Seattle University is as follows:

100 to 199 are freshman courses

200 to 299 are sophomore courses

300 to 399 are junior courses

400 to 499 are senior courses

500 and above are graduate courses—graduate standing required to register for courses numbered 500 or above.

Credit by Examination

Examinations for advanced credit in courses offered by the University may be taken by a student for work done in private study or on subject matter taken at a non-accredited college or university, with the following restrictions:

1. Student must be currently registered at Seattle University.
2. No student may take an advanced credit examination in a course in which he has already been registered.
3. The maximum number of credits obtainable by advanced credit examination is 28, not more than 12 of which may be obtained in one subject matter field. All credits obtained by examination will be counted as extension credit and included in the maximum 44 extension credits allowed.
4. No credit will be granted unless the applicant has earned a minimum of 12 resident credits with a minimum grade-point average of 2.50.
5. No student within a given field of study may receive advanced credit in subject matter more elementary than that for which he has previously received credit.
6. No student will be permitted to repeat an examination for advanced credit.
7. No student may take examinations for more than 12 advanced credits in any one quarter.
8. No student may receive advanced credit by examination for lower division foreign language courses in his native language or from earlier schooling except in rare cases and for the 103 language course only.
9. Students who wish to qualify for credit by examination must apply to the Registrar and Treasurer for approval.
10. No graduate credit is to be given by examination.
11. No credit by examination may be given for physical education activity courses.

Credit Hour Load

The normal credit hour load is 16 hours per quarter. No student may carry excess credit hours without permission from the dean of his school, which may be obtained before or during registration.

Students on academic probation may be required by the Academic Vice President and/or the dean of their school to carry less than the normal credit hour load. Each student is responsible to his dean for judging the correct ratio between credit hour load, cocurricular activities and outside employment so that he has adequate time for academic preparation.

Dismissal

Any student who fails eight quarter hours or more in any one quarter is subject to dismissal from the University. The Academic Council shall decide when a student on probation, because of continued low scholarship, shall be dropped. In order to be reinstated the student must petition the Academic Council through the Probation Review Board or his school. A student withdrawing voluntarily from the University is entitled to a statement of honorable dismissal if he is not liable to dismissal on account of scholarship, absence, breach of discipline, or financial indebtedness to the University.

Examinations

Examinations in all courses are regularly held at the middle and end of each quarter, and at such other times as the instructor may determine. Absence from an announced written examination is excusable at the discretion of the instructor and subject to review by the Academic Vice President. Students absenting themselves from a scheduled examination without justifiable cause will receive a failing grade for the examination. Make-up examinations assigned by an instructor for students excused from a scheduled one are administered by the Counseling and Testing Center. Arrangements for a make-up examination and payment of the required fee are the responsibility of the student.

Change in Grade

Once a grade is recorded it can be changed only by the Academic Vice President on the written faculty action sheet completed by the instructor and countersigned by the department chairman or dean of the school. In no case will the grade be changed after 30 days following the issue of the student's quarterly grade report.

Grade Reports

Student quarterly grade reports are mailed at the end of each quarter. Students may obtain copies of their transcripts for a fee of 50 cents per copy. The University does not hold itself responsible for grade report errors unless the Registrar is notified of the error within six months after the issue of a grade report.

Grading System

The University uses a letter grade to indicate the level of individual student achievement. Each letter grade has a quality point value assigned as the unit of measurement. The total number of quality points earned for any course is obtained by multiplying the credit hours for the course by the quality point value assigned for the grade achieved. The quality point value is assigned to each letter grade as follows:

- A.....4 quality points
- B.....3 quality points
- C.....2 quality points
- D.....1 quality point
- E, EW....0 quality points

The grades of I, W, S, or N have no quality point value.

Each student is required to maintain a C average, which is equivalent to a 2.00 grade point average. The grade point average is computed by dividing the total number of quality points achieved in one quarter by the total number of credit hours attempted.

The University follows the letter grading system shown below.

Grade	Percentage Value	Descriptive Value
A	93-100	A superior student; shows ability to use factual knowledge in reaching independent conclusions and can synthesize facts into a logical and coherent pattern; shows interest in relating collateral reading to the principles developed in course work; scholarship exceeds requirements.
B	85-92	An above average student; knowledge is very good, scholarship meets all requirements, information is complete but not detailed.
C	77-84	Average student; knowledge is good; scholarship meets assignments, but information is incomplete.
D	70-76	Below average student; knowledge is fair, scholarship does not meet assignments; essential information is lacking or false information given.
E	Below 70	A failing student.
W	Withdrawal	Official withdrawal during the first six weeks of the quarter.
EW	Failing Withdrawal	Unofficial withdrawal at any time during the quarter, or failing withdrawal after the first six weeks of the quarter. To be computed as an E in calculation of the grade point average.
I	Incomplete	At the discretion of the instructor the student is given this grade when as a result of serious illness or other justifiable cause the work cannot be completed. The student must complete the work within thirty days after the beginning of the next quarter or a grade of E will automatically be recorded for the course. To remove the incomplete the student must obtain the official removal card and pay the required fee within the 30-day period. Spring quarter incompletes must be removed within 30 days after the beginning of fall quarter.
N	No grade	A suspended grade for courses in which work is not scheduled for completion until after the quarter closes, i.e., thesis or research courses.
S	Satisfactory	A satisfactory grade given for thesis or in non-credit courses.
Y	Audit	Course for which no credit is given. May not be repeated for credit.

Honor Roll

Students who achieve a 3.50 or higher grade point average for any quarter will be included on the honors

list published by the Registrar. The privilege of auditing a single lecture or all sessions of classes for which they are not registered is granted to honor roll students with the permission of the teacher.

Probation

If during any quarter a student falls below the standard he must maintain in order to graduate, he may be placed on probation by the Academic Vice President and given the opportunity to improve the quality of his work before final dismissal. A student will be placed on probation if his cumulative grade point average falls below 2.00.

At the discretion of his dean a student on academic probation may be required to reduce the number of credits carried per quarter and his participation in extra-curricular activities may be curtailed. Probation may extend for two quarters after the initial warning before dismissal is warranted.

Readmission

Students who have been absent from Seattle University for one or more quarters and students who have attended another school since withdrawing from Seattle University are required to fill out an application-for-readmission form. A re-entering student who has attended another school since his withdrawal from Seattle University must arrange for two copies of his transcript to be submitted to the Registrar before his application for admission can be considered by the Board of Admissions.

Registration

Newly admitted students and returning students must present themselves at the University for registration on the date specified in the calendar or elsewhere by the Registrar. All students, including auditors, transfer students and those readmitted after a lapse in attendance, must register in person.

No registrations are permitted after the second class day. Payment of the late registration fee of \$10 for the first day and the further fee of \$10 for the second day is required. Students registering late are held responsible for absences thus incurred.

Registration is completed only when fees are paid and approved registration cards are turned in to the Treasurer's office. No person may attend any University course for which he has not registered either as a student or as an auditor.

Change of Registration

Students are held accountable for completion of every course entered on registration cards. If it is necessary to drop or add a course or to otherwise change a program of study, the student must obtain a change of course card from the Registrar's office and present it to his adviser or dean for approval. This card and the required fee must be returned to the Treasurer within the specified time limit. No course may be added or changed after the fifth day of class. A student who drops or changes courses without following this procedure will receive an EW (unofficial withdrawal) which will be computed as a failing grade in the quarterly and cumulative grade point average.

Repeating a Course

Students who receive a grade of D, E, or EW may repeat the course. In such cases the grade received the second time shall be the one counted in computing the grade point average required for graduation. The grade earned the second time cannot be higher than a C. In determining University graduation honors only the grade received the first time will be counted.

Transcripts

Students may obtain official transcripts from the Registrar's office. The first official transcript will be sent free of charge but each additional copy will cost \$1. However, no official transcript copies will be sent if the student has a financial obligation outstanding with the University until that obligation is satisfied.

Seattle University will not issue a transcript to any third party unless the student or graduate files a written request with the Registrar and supplies the necessary name and address. Parents or guardians may receive a copy of the student's record on written request to the Registrar's office.

Letters of recommendation or copies of transcripts should be requested at least one week before they are required. Transcripts cannot be issued during the period of registration, examinations, or commencement, nor will they be issued if the student has a financial or property obligation to the University.

The University does not hold itself responsible for any error on a transcript which is not brought to the attention of the Registrar within six months of occurrence.

Transfer within the University

To transfer from one school of the University to another or from one department to another (change of major) the student must follow this procedure:

Obtain a change of school request from the Registrar and present it to the dean of the school from which withdrawal is sought. When the form is approved by this dean it is presented to the dean of the school in which the student wishes to enroll. If approved by the new dean the form is returned to the Registrar and the student's record is altered accordingly. Students may be admitted to the School of Engineering from other schools of the University with a grade point average of 2.00 provided they are not deficient in algebra, plane trigonometry or laboratory science.

Withdrawal

The Registrar's office must be officially notified when a student withdraws from one or more of his courses. Failure to comply with the withdrawal procedure will result in a failing grade (EW—unofficial withdrawal) being entered on the student's record. The withdrawal card is obtained from the Registrar and presented to the adviser, instructor, dean and Registrar in that order for approval and signature. In an emergency, notification of withdrawal may be made by telephoning the Dean of Students, dean of the school or Registrar.

The official withdrawal is completed only when the approved card and required fee are presented to the treasurer within the specified time limit. A grade of W will be allowed during the first six weeks of the quarter. After this period no withdrawals are permitted and a grade of E or EW will be assigned.

Degrees and Honors

30

degrees

Official Commencement Exercises are held once a year in May or June. Students completing course requirements at the close of summer, fall or winter quarter will receive diplomas at the succeeding Commencement. All responsibility for fulfilling the requirements for graduation rests with the individual student.

Application for a Degree

Application for a degree must be made at the Office of the Registrar within the period indicated in the University calendar or other official publications. Candidates for a degree normally file applications during the quarter preceding their final registration. A receipt for the graduation fee must be presented before the Registrar may issue the application forms.

Graduation with Honors

Graduation with honors requires the earning of at least 90 quarter hours of credit in residence as a junior and senior at Seattle University.

A candidate for an undergraduate degree with a cumulative grade point average of 3.25 graduates *CUM LAUDE*; one with a cumulative grade point average of 3.50 graduates *MAGNA CUM LAUDE*; one with a cumulative grade point average of 3.75 graduates *SUMMA CUM LAUDE*.

Degree Requirements

Candidates for an undergraduate degree must meet the requirements listed below. Requirements for advanced degrees are given in the section on the Graduate School.

1. Core curriculum requirements of the University as described on page 24 of this bulletin and specific requirements of the college or school from which the student expects to graduate must be fulfilled.
2. A minimum of 180 credits is required for the baccalaureate degree. However, only students matriculating as freshmen beginning September 1963 or later and transfer students matriculating January 1966 or later are eligible to graduate with 180 credits. Students who matriculated before these dates will be required to meet minimum requirements in effect at the time they were last enrolled as full time students, unless the following reduction scale applies:
 - a. Readmitted students who earn 12 credits after returning to campus will be permitted to graduate with 192 hours.
 - b. Readmitted students earning 36 credits after returning to campus may graduate with 184 hours.
 - c. Readmitted students earning 48 or more credits after returning to campus may graduate with 180 hours.
3. A minimum of 20 hours in philosophy and 16 hours in theology are required in all degree programs ex-

cept engineering effective September 1965. See sections on philosophy and theology for specific requirements.

4. The senior year must be spent in residence at the University, which shall be understood to mean the final 45 quarter hours of degree requirements, and the class work is to be taken in the University classrooms under the direction of members of the faculty.
5. Completion of all degree requirements within 10 years of the date on which the college work was begun. Students who were in attendance prior to October 1951 are not affected by this regulation.
6. Satisfaction of all financial obligations toward the University.
7. All candidates for degrees must be present at the Baccalaureate and Commencement exercises to receive degrees. Formal petition must be made to the Academic Vice President requesting graduation "in absentia."
8. Students working for a second baccalaureate degree, either consecutively or concurrently, must complete a minimum of 44 quarter hours beyond the requirements of the first baccalaureate degree. These 44 hours must be completed in residence at Seattle University. A minimum of two courses (8 quarter hours) in philosophy and one course in theology (4 quarter hours) is required. Students completing this minimum of 12 quarter hours in philosophy and theology at Seattle University or elsewhere as part of a first bachelor's degree will be considered as having fulfilled this requirement. Minimum academic and administrative requirements listed above must also be met.

Special Awards

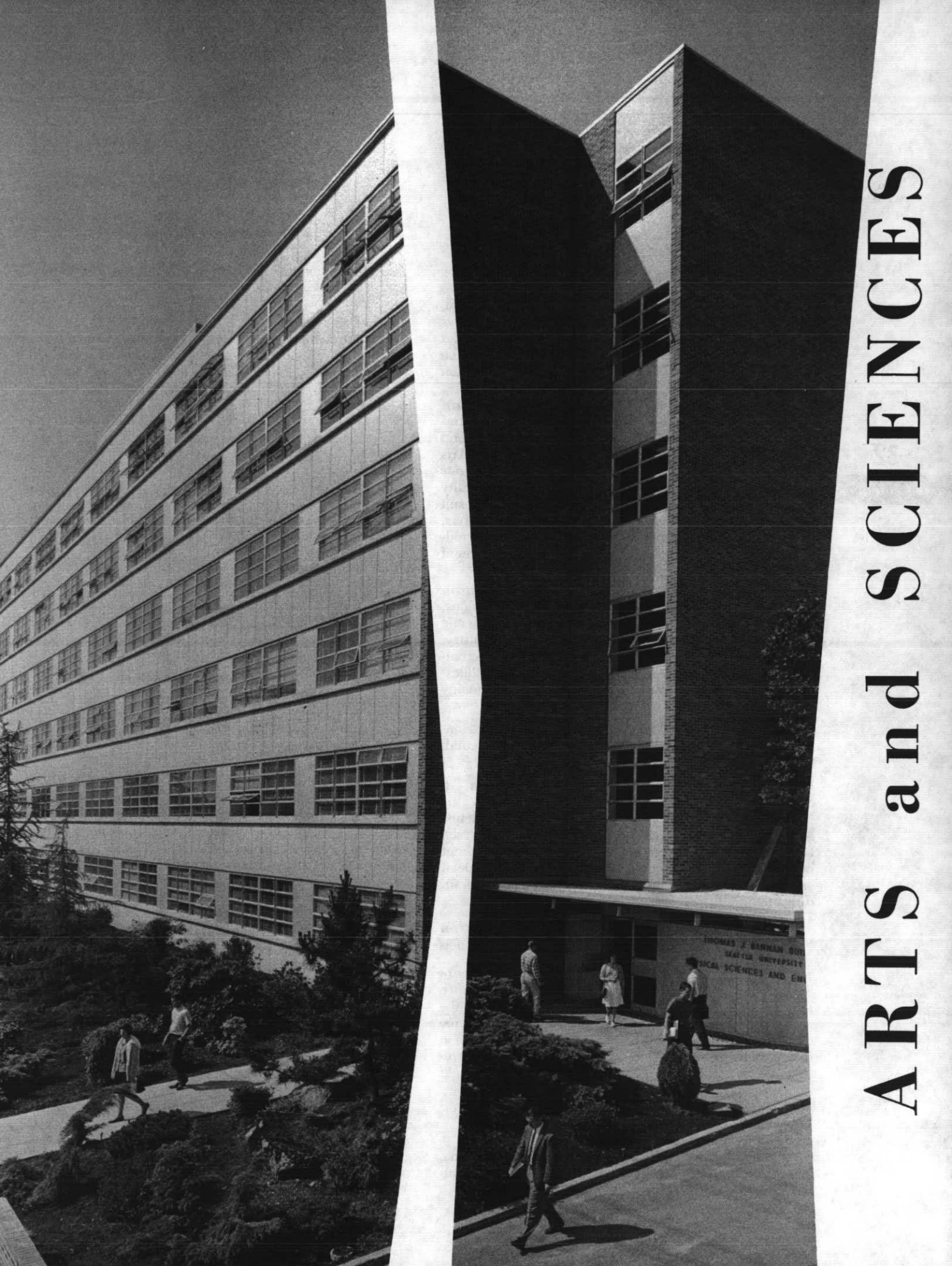
THE PRESIDENT'S CUP—Awarded to the graduating senior who has maintained the highest scholarship throughout the four years of college work.

THE BISHOP SHAUGHNESSY MEDAL—Awarded in memory of the Most Reverend Gerald Shaughnessy, S.M., S.T.D., late Bishop of Seattle, to the graduating senior maintaining outstanding grades in Philosophy and Theology.

EUGENE F. FABRE AWARD—Presented annually by Alpha Sigma Nu to the senior male student who has done the most to promote scholarship during his time at the University.

LOYALTY CUPS—Presented by the Seattle University Alumni to the students chosen by the faculty and student body as outstanding in their loyalty, leadership and participation in student activities.

BILL BATES' CUP—Annually presented by the Silver Scroll to the graduating senior who most nearly resembled, in the opinion of the faculty and student body, the spirit of Bill Bates, Class of 1943.



ARTS and SCIENCES

THOMAS J. BARNAN BUILDING
STATE UNIVERSITY OF CALIFORNIA
SCIENCES AND ENGINEERING

College of Arts and Sciences

Robert I. Bradley, S.J., Ph.D., *Dean*
James E. Royce, S.J., Ph.D., *Associate Dean*

Objective

The College of Arts and Sciences has for its objective the development of personality—integral and liberal, Christian and humane. The instrumentalities it employs to attain this objective are the traditional principles and structures of Jesuit education, of which in the ensemble of the University it is the natural custodian and guide.

Curriculum

Pursuant of this objective and these instrumentalities and commensurate with its position as the oldest and largest school of Seattle University, the College of Arts and Sciences has a dual role: 1) for all the students of the University it provides the programs and faculty of the core curriculum—the primary instrument of Jesuit higher education; and 2) for its own students it offers, beyond the core curriculum, programs and faculty guidance toward graduate proficiency in one or more of the various arts and sciences.

Organization

The College comprises 24 administrative subdivisions, of which 16 are departments in a specific academic subject. The departments are: Biology, Chemistry, English, Fine Arts, History, Home Economics, Journalism, Languages, Mathematics, Military Science, Philosophy, Physics, Political Science, Psychology, Sociology and Theology.

The program divisions are: Community Services, Honors, Medical Records, Medical Technology, Pre dental, Prelaw, Premajor and Premedical.

Each department chairman or program director, in collaboration with his proper or assigned faculty, arranges study programs and counsels individual students. All programs are coordinated and supervised by the Dean of the College. Students wishing to inquire about programs in detail should consult either the Dean or the respective department chairman or program director.

Accreditation

Northwest Association of Secondary and Higher Schools

Admission Requirements

Students entering the College must satisfy all entrance requirements for the University as outlined in the Admission section in this bulletin. In addition, some departments list further requirements for admission into certain major programs. Concerning these the respective departmental sections in this bulletin should be consulted.

Degrees Offered

Bachelor of Arts (Classical)

Bachelor of Arts (Non-Classical)

with a major in: Community Services, Drama, English, Fine Arts, History, Humanities, Journal-

ism, Languages, Mathematics, Music, Philosophy, Political Science, Psychology, Social Science, Sociology.

Bachelor of Science

with a major in: Biology, Chemistry, General Science, Home Economics, Mathematics, Medical Records, Medical Technology, Military Science, Natural Science, Physics, Psychology.

General Program Requirements

Students in the College of Arts and Sciences must satisfy the core curriculum requirements of the University given on page 24 of this bulletin. In addition all candidates for the Bachelor of Arts degree must complete either 12 hours of foreign language or 12 hours of fine arts, history 101 and a fourth core course in English. These additional core sequences are not required of candidates for the Bachelor of Science degree, but are strongly recommended.

For the degree of Bachelor of Arts (Classical), in addition to these general requirements, the following must be fulfilled: 12 hours of courses numbered 300 to 499 in either Latin or Greek; and 8 hours of mathematics if the core curriculum option was science, or 8 hours of science if the core option was mathematics.

Additional specific requirements are set by the department or program division in which the student's major program is pursued. For these requirements consult the respective sections in this bulletin.

Subject Majors

In all programs having a specific subject major, the number of required courses and hours varies according to the department or program division. The minimal number required in any subject major is 44 hours; majors in departments having core sequences must consist of 32 hours beyond the core sequence.

Area Majors

Rather than in a specific subject, five major programs concentrate in an area: fine arts, humanities or social science (for the Bachelor of Arts degree); general science or natural science (for the Bachelor of Science degree). For all such area majors, except general science, the normal requirement is 48 hours beyond the core curriculum in some combination of related subjects.

Suggested combinations are: 32 hours in one subject and 16 in another; 28 hours in one, 12 in a second, and 8 in a third; or 20, 16 and 12. For general science the requirement is 80 hours of science, with at least 24 hours in each of two subjects. The selection of subjects and their definitive combination is the responsibility of the department chairman in which the greatest number of courses will be taken.

Biology

Lewis E. Aldrich, Ph.D., *Chairman*

Objectives

The programs in the department are designed to provide a liberal education and to prepare a student for graduate studies or for professional work in basic and applied biology.

Degrees Offered

Bachelor of Science
Bachelor of Science in Natural Science

General Program Requirements

Students in biology must satisfy the core curriculum requirements of the University as given on page 24 of this bulletin, and those of the College of Arts and Sciences on page 32.

Departmental Requirements

BACHELOR OF SCIENCE—44 hours of biology which must include BI 150, 160, 170; and at least 8 hours of courses at the 400-490 level. Also required are 20 hours of chemistry, 15 hours of physics, a reading knowledge of a modern language (equivalent to 103 as determined by examination), Psy 100 and Mt 111. Courses in calculus, biochemistry and statistics are recommended.

BACHELOR OF SCIENCE IN NATURAL SCIENCE—40 hours of biology which must include BI 150, 160 and 170, with additional hours selected in consultation with the adviser, and 20 hours of chemistry. A year of physics and a course in calculus are recommended.

UNDERGRADUATE MINOR—24 hours of biology selected at direction of a biology adviser.

Bachelor of Science

Freshman Year

Biology 150, 160, 170 12 hours
English 100, 160, core elective 12 hours
Mathematics 111 and either 131 or
Social Science 8 hours
Philosophy 125, 150, 175 12 hours
Psychology 100 4 hours

BI 101 Life Science 4 credits
Important areas of biology, beginning at the cellular level and culminating with a consideration of interactions and changes in natural populations. Not open for credit to students who have taken BI 150. Prerequisite: Ch 100.

BI 150 Biological Principles 4 credits
Principles of biology common to both botany and zoology, such as cell anatomy and physiology, metabolism, mitosis, meiosis genetics, ecology and evolution. Three lecture and two laboratory hours per week.

Sophomore Year

Biology electives 12 hours
Chemistry 111, 112, 113 (or 114, 115, 116) 12 hours
History 102 and core elective 8 hours
Philosophy 225, 250 8 hours
Social Science 4 hours
Theology 120 4 hours

Junior Year

Biology electives 12 hours
Chemistry 225 and 226 or 235 and 236 and
219 or 237 or BI 455 8-14 hours
Modern Language 101, 102, 103 12 hours
Theology 220 4 hours

Senior Year

Biology electives 8-9 hours
Physics 105, 106, 107 15 hours
Theology 320 and core elective 8 hours
Social Science 4 hours
Electives 8-10 hours

Total 180-182 hours

Bachelor of Science in Natural Science

Freshman year

Biology 150, 160, 170 12 hours
English 100, 160, core elective 12 hours
Mathematics 111 4 hours
Psychology 100 and Social Science 8 hours
Philosophy 125, 150, 175 12 hours

Sophomore year

Biology electives 8 hours
Chemistry 111, 112, 113 (or 114, 115, 116) 12 hours
History 102 and core elective 8 hours
Philosophy 225, 250 8 hours
Theology 120 4 hours
Elective 4 hours

Junior year

Biology electives 8 hours
Chemistry 225, 226 10 hours
Theology 220, 320 and core elective 12 hours
Electives 18 hours

Senior year

Biology electives 12 hours
Social Science 4 hours
Electives 24 hours

Total 180 hours

Biology Courses

BI 160 General Botany 4 credits
Structure, function, taxonomy and ecology of plants. Three lecture and two laboratory hours per week. Prerequisite: BI 150.

BI 170 General Zoology 4 credits
Structure, function, taxonomy and ecology of animals. Three lecture and two laboratory hours per week. Prerequisite: BI 150.

BI 180 Human Genetics 4 credits
The pattern of biological inheritance in man. Credits not applicable for biology major.

- BI 200 Anatomy** 4 credits
Structure of the human organism. Credits not applicable for biology major. Three lecture and two laboratory hours per week.
- BI 210 Physiology** 4 credits
Functions of the human organism. Three lecture and two laboratory hours per week. Credits not applicable for biology major. Prerequisite: BI 200.
- BI 220 Microbiology** 4 credits
Introduction to medical microbiology. Three lecture and two laboratory hours per week. Credits not applicable for biology major.
- BI 231 Anatomy, Morphology and Taxonomy of the Invertebrates** 5 credits
Three lecture and four laboratory hours per week. Prerequisite: BI 170.
- BI 232 Natural History and Ecology of the Invertebrates** 4 credits
Three lecture and three laboratory hours per week. Prerequisite: BI 160; recommended: BI 231.
- BI 241 Vertebrate Zoology** 4 credits
Structure, physiology, ecology and behavior of Hemichordata and Chordata. Three lecture and four laboratory hours per week. Prerequisite: BI 170.
- BI 251 Plant Morphology** 4 credits
A study of plant form, structure and development. Three lecture and two laboratory hours per week. Prerequisite: BI 160.
- BI 252 Taxonomy of Flowering Plants** 4 credits
Native flora as an introduction to taxonomy, involving the principal orders and families of flowering plants. Three lecture and two laboratory hours per week. Prerequisite: BI 160 or 251.
- BI 270 Human Biology I** 4 credits
Microscopic and gross structure and physiology of the organ systems of the human; skeletal, muscular, circulatory and respiratory systems. Three lecture and two laboratory hours per week. Prerequisites: BI 101 or 150, Ch 101, 102.
- BI 271 Human Biology II** 4 credits
The digestive, excretory, reproductive, endocrine and nervous systems. Three lecture and two laboratory hours per week. Prerequisite: BI 270. Students with credit in BI 200 or 210 may not receive credit for 270, 271.
- BI 275 General Physiology** 4 credits
Chemical and physical processes inherent in living organisms. Three lecture and two laboratory hours per week. Prerequisite: BI 170 and/or 160.
- BI 280 Cell Physiology** 4 credits
Fundamental life processes in plant and animal cells. Three lecture and two laboratory hours per week. Prerequisite: BI 150.
- BI 300 Microbiology** 4 credits
Morphology, physiology and distribution of microorganisms. Three lecture and three laboratory hours per week. Prerequisite: Permission of instructor.
- BI 303 Biophysical Principles** 3 credits
The interdependence of selected biosystems such as nervous, muscular, respiratory and physical principles of matter and energy including sound, heat, light, electricity. Organized to meet the needs of science teachers on the elementary level. Credits not applicable for biology major.
- BI 304 Biophysical Laboratory** 1 credit
Simplified series of experiments and demonstrations designed to implement the principles in BI 303. Credits not applicable for biology major. Two laboratory hours per week.
- BI 310 Comparative Vertebrate Embryology** 4 credits
Early development of the frog and chick with consideration of the early development of the human. Three lecture and four laboratory hours per week. Prerequisite: BI 241.
- BI 320 Comparative Anatomy of the Lower Vertebrates** 4 credits
Structure, function and phylogenetic and evolutionary interrelationships of the vertebrates below the mammals. Three lecture and four laboratory hours per week. Prerequisite: BI 241.
- BI 321 Vertebrate Natural History** 4 credits
Ecology, behavior, life history and taxonomy of vertebrate animals, with emphasis on those in the Pacific Northwest. Three lecture and four laboratory hours per week. Prerequisite: BI 241.
- BI 325 Comparative Anatomy of Mammals** 4 credits
Structure, function and phylogenetic and evolutionary interrelationships of mammals. Three lecture and four laboratory hours per week. Prerequisite: BI 241; recommended: BI 320.
- BI 330 Comparative Vertebrate Histology** 4 credits
Study of fundamental body tissues. Three lecture and four laboratory hours per week. Prerequisites: BI 150 and permission of instructor.
- BI 340 Microtechnique** 2 credits
Preparation of slides of animal tissue by the paraffin method; techniques of staining procedures. Two lecture and four laboratory hours per week. Prerequisite: BI 330 or concurrently.
- BI 350 Genetics** 4 credits
Classical and molecular principles of heredity. Three lecture and three laboratory hours per week. Prerequisite: BI 150.
- BI 360 Parasitology** 4 credits
Study of parasitic protozoa, helminths and arthropods. Three lecture and three laboratory hours per week. Prerequisite: BI 231; recommended: BI 232.
- BI 370 Population Biology: Ecology** 4 credits
Study of ecology and evolution with emphasis on population ecology. Prerequisite: BI 150 and permission of instructor.
- BI 375 Marine Biology** 4 credits
Study of the marine environment and the animals and plants inhabiting it. Three lecture and four laboratory hours per week. Prerequisites: BI 231, 232.
- BI 430 Endocrinology** 4 credits
Structure and function of the glands of internal secretion of vertebrates. Prerequisites: Advanced standing in biology and Ch 226 or 236.
- BI 435 Comparative Neurology** 3 credits
Study of the phylogenetic history of the central nervous system. Prerequisite: BI 310 or 325.
- BI 440 Neurobiology** 4 credits
Principal pathways of the vertebrate nervous system including a gross and microscopic study of the human brain and spinal cord. Three lecture

and two laboratory hours per week. Prerequisites: Bl 200, 210 or 270, 271 or 310 or 325.

- Bl 450 Advanced Invertebrate Zoology** 4 credits
Advanced studies of the invertebrate phyla. Three lecture and four laboratory hours per week. Prerequisites: Bl 231, 232.
- Bl 455 Biological Chemistry** 4 credits
Composition and metabolism of carbohydrates, lipids, proteins, enzymes and body fluids. Three lecture and three laboratory hours per week. Prerequisite: Ch 226 or 236.
- Bl 460 Limnology** 4 credits
Study of freshwater systems and the plants and animals inhabiting them, with emphasis on the invertebrate animals. Three lecture and three laboratory hours per week. Prerequisite: Bl 170; recommended: Bl 470 and/or 231 and/or 232.
- Bl 465 Population Biology: Evolution** 4 credits
Study of ecology, population genetics and evolution, with emphasis on evolution. Prerequisite: Bl 150; recommended: Bl 350.

- Bl 470 Entomology** 4 credits
Structure, function, classification, ecology, behavior and economic importance of insects. Three lecture and three laboratory hours per week. Prerequisite: Bl 150; recommended: Bl 170.
- Bl 491 Special Topics in Biology** 1-4 credits
Bl 492 Special Topics in Biology 1-4 credits
Bl 493 Special Topics in Biology 1-4 credits
Directed reading and/or lectures and/or laboratories on topics at the advanced undergraduate level. Prerequisite: Permission of instructor.
- Bl 494 Seminar** 1 credit
Bl 495 Seminar 1 credit
Bl 496 Seminar 1 credit
Problems in modern biology. Prerequisite: Permission of instructor.
- Bl 497 Research** 1-4 credits
Bl 498 Research 1-4 credits
Bl 499 Research 1-4 credits
Literature and laboratory investigation of a basic research problem. Preparation of a written report. Prerequisite: Permission of instructor.

Objectives

Programs offered by the Chemistry department are designed to prepare the student for professional work in the various fields of basic and applied chemistry. The Bachelor of Science degree program, which is approved by the Committee on Professional Training of the American Chemical Society, is especially suited to those preparing for graduate studies in chemistry. The Clinical Chemistry program is especially suited to those students interested in a career in the rapidly developing field of clinical chemistry. This degree will also provide adequate preparation for graduate studies in clinical chemistry, biochemistry, or medicine. The Natural Science degree program is recommended for those desiring a solid foundation in chemistry but with greater freedom of choice of elective courses such as education, business, pre-medical studies, or other fields within the College of Arts and Sciences.

Degrees Offered

- Bachelor of Science
- Bachelor of Science in Clinical Chemistry
- Bachelor of Science in Natural Science
- Master of Science in Natural Science (summer)

General Program Requirements

Students in chemistry must satisfy the core curriculum requirements of the University given on page 24 of this bulletin and those of the College of Arts and Sciences on page 32. The Bachelor of Science and clinical chemistry programs require the mathematics and physics sequences and 12 hours of German. The Bachelor of Science in Natural Science program requires the mathematics sequence, 12 hours of social science and 12 hours of modern language.

Chemistry

Vincent S. Podbielancik, Ph.D., *Chairman*

Departmental Requirements

- BACHELOR OF SCIENCE**—73 hours of chemistry which must include Ch 111 or 114, 112 or 115, 113 or 116, 235, 236, 237, 238, 324, 325, 326, 355, 356, 357, 415, 436, 460, 461, 497, 498, 499. A minimum grade of C is required in all science and mathematics courses.
- BACHELOR OF SCIENCE IN CLINICAL CHEMISTRY**—56 hours in chemistry which must include Ch 114, 115, 116, 219, 225, 226, 355, 356, 455, 456, 461, 470, 471, 491 or 497, 492 or 498, 493 or 499. Recommended electives: Ch 238, 357, Bl 280, 330, 350, Mt 114, humanities courses.
- BACHELOR OF SCIENCE IN NATURAL SCIENCE**—40 hours of chemistry which must include Ch 111 or 114, 112 or 115, 113 or 116, 119 or 324, 219 or 325, 225 or 235, 236, 237, 351 or 355, plus electives from the following: 356, 357, 415, 436, 456, 460, 461, 495, 497, 498, 499. For those interested in biochemistry, the following courses are recommended: Bl 150, 170, 275 and 300.
- MASTER OF SCIENCE IN NATURAL SCIENCE**—45 hours of courses numbered 400 or higher which may include the following: Ch 411, 412, 419, 435, 495, 511, 535, 555, 556, 560, 590, or selections from the corresponding programs in physics or mathematics.

Bachelor of Science

- Freshman year**
- Chemistry 111 or 114, 112 or 115, 113 or 116. . . 12 hours
 - English 100, 160 8 hours
 - Mathematics 131, 132, 133 12 hours
 - Philosophy 125, 150, 175 12 hours
 - Physics 109 3 hours

Sophomore year

Chemistry 235, 236, 237, 238	16 hours
Mathematics 237, 238	8 hours
Philosophy 225, 250	8 hours
Physics 200, 201, 202	15 hours
Theology 120	4 hours

Junior year

Chemistry 324, 325, 326, 355, 356, 357	26 hours
German 101, 102, 103	12 hours
Theology 220, 320 and core elective	12 hours

Senior year

Chemistry 415, 436, 460, 461, 497, 498, 499	19 hours
English core elective	4 hours
History 102 and core elective	8 hours
Electives	1 hour

Total.....180 hours

Bachelor of Science in Clinical Chemistry**Freshman year**

Chemistry 114, 115, 116	12 hours
English 110, 160 and core elective	12 hours
Mathematics 111, 131, 132	12 hours
Philosophy 125, 150, 175	12 hours

Sophomore year

Chemistry 219, 225, 226	12 hours
Biology 150	4 hours
History 102 and core elective	8 hours
Philosophy 225, 250	8 hours
Physics 105, 106, 107	15 hours
Theology 120	4 hours

Junior year

Biology 270, 271	8 hours
Chemistry 355, 356, 455	12 hours
Language 101, 102, 103	12 hours
Physics 332	4 hours
Theology 220, 320 and core elective	12 hours

Ch 100 Principles of Physical Sciences 4 credits

Principles of chemistry and physics as a foundation for the life sciences; matter and energy, molecular and atomic structure, chemical bonding, equilibrium, reaction rates, covalent carbon compounds. Four lecture hours per week.

Ch 101 Introductory General Chemistry 4 credits

Survey of inorganic chemistry treating the basic principles and descriptive material requisite for nursing. Three lecture and three laboratory hours per week.

Ch 102 Introductory Organic Chemistry 4 credits

Survey of organic and biological chemistry treating the basic principles and descriptive material requisite for nursing. Three lecture and three laboratory hours per week. Prerequisite: Ch 101.

Ch 103 Topics in Chemistry 4 credits

A lecture and seminar treatment in depth of selected topics in chemistry, historically oriented; investigation of some philosophical and sociological implications of science. Prerequisite: Bl 101.

Senior year

Chemistry 456, 461, 470, 471, 491 or 497, 492 or 498, 493 or 499	21 hours
Social Science	8 hours
Electives	4 hours

Total.....180 hours

Bachelor of Science in Natural Science**Freshman year**

Chemistry 114, 115, 116, 119	15 hours
English 100, 160 and core elective	12 hours
Mathematics 131, 132	8 hours
Philosophy 125, 150, 175	12 hours

Sophomore year

Chemistry 219, 225 or 235, 226 or 236, 237 or 455	15-18 hours
History 102 and core elective	8 hours
Philosophy 225, 250	8 hours
Theology 120	4 hours
Electives	13 hours

Junior year

Chemistry 351 and elective	8 hours
Language 101, 102, 103	12 hours
Physics 105, 106, 107	15 hours
Theology 220, 320 and core elective	12 hours
Elective	4 hours

Senior year

Social Science	12 hours
Electives	16-19 hours

Total.....180 hours

Chemistry Courses**Ch 111 General Inorganic Chemistry I 4 credits**

For students with no high school chemistry. Atomic structure, weight relations, states of matter, solutions, kinetics, equilibrium. Three lecture, one quiz and three laboratory hours per week.

Ch 112 General Inorganic Chemistry II 4 credits

Electrical energy, aqueous solutions, alkali metals, alkaline earths, hydrogen, oxygen, the halogens, groups IV, V and VI. Three lecture, one quiz and three laboratory hours per week. Prerequisite: Ch 111 or 114.

Ch 113 General Inorganic Chemistry III 4 credits

Atomic structure, group III elements, transition metals, covalent carbon compounds, nuclear structure and radioactivity. Three lecture, one quiz and three laboratory hours per week. Prerequisite: Ch 112 or 115.

Ch 114 General Inorganic Chemistry I 4 credits

For students with high school chemistry. Treats same topics as Ch 111, but with deeper penetration. Three lecture, one quiz and three laboratory hours per week. Prerequisite: High school chemistry.

- Ch 115 General Inorganic Chemistry II** 4 credits
Treats same topics as Ch 112, but with deeper penetration. Three lecture, one quiz and three laboratory hours per week. Prerequisite: Ch 111 or 114.
- Ch 116 General Inorganic Chemistry III** 4 credits
Treats same topics as Ch 113, but with deeper penetration. Three lecture, one quiz and three laboratory hours per week. Prerequisite: Ch 112 or 115.
- Ch 119 Elementary Qualitative Analysis** 3 credits
An introductory analysis course treating the theory of precipitation, the laws of chemical equilibrium, and the methods and general principles of semi-micro separation and identification of the common cations. Two lecture and four laboratory hours per week. Prerequisite: Ch 112 or 115.
- Ch 125 Freshman Seminar** 1 credit
- Ch 126 Freshman Seminar** 1 credit
- Ch 127 Freshman Seminar** 1 credit
Discussions dealing with current problems of interest to science students.
- Ch 219 Quantitative Analysis** 4 credits
Theory, methods and techniques of gravimetric and volumetric procedures in quantitative analysis. Two lecture and six laboratory hours per week. Prerequisites: Ch 116, 119.
- Ch 225 Organic Chemistry for the Biosciences** 4 credits
Functional groups, thermodynamic and kinetic aspects of reactions of selected groups. Ultraviolet and visible spectra and correlation with theory. Theory and practice of laboratory operations. Introduction to the literature. Three lecture and three laboratory hours per week. Prerequisite: Ch 112 or 115.
- Ch 226 Organic Chemistry for the Biosciences II** 4 credits
Conjugated systems and heterocycles, oxidation-reduction mechanisms and electrochemistry. Natural products, biopolymers. Enzymes: structure and mechanism of catalysis. Laboratory emphasizes separation and analysis of natural products. Three lecture and three laboratory hours per week. Prerequisite: Ch 225.
- Ch 235 Organic Chemistry I** 5 credits
Structure, functional groups, properties, synthesis and uses of organic compounds; emphasis on structural theory and reaction mechanisms; theory of laboratory operations. Three lecture and six laboratory hours per week. Prerequisite: Ch 112 or 115.
- Ch 236 Organic Chemistry II** 5 credits
Stereo-chemistry, reactions of carbonyl derivatives, carbonyl compounds and organic acids and bases. Three lecture and six laboratory hours per week. Prerequisite: Ch 235.
- Ch 237 Organic Chemistry III** 3 credits
Carbohydrates, amino acids and proteins. Three lecture hours per week. Prerequisite: Ch 236.
- Ch 238 Qualitative Organic Analysis** 3 credits
Methods of identification of organic compounds as simple and mixed unknowns; preparation of derivatives; discussion and use of modern spectroscopic methods. Six laboratory hours per week, plus discussion of principles. Prerequisite: Ch 236.
- Ch 314 Inorganic Chemistry I** 4 credits
Atomic structure, chemical bonding, stoichiometry, solutions, kinetics, equilibrium, electrochemistry. Three lecture and three laboratory hours per week. For engineering students only. Prerequisite: Ph 202.
- Ch 315 Inorganic Chemistry II** 4 credits
Alkali metals, alkaline earths, transition metals, groups III, IV, V, VI, VII, organic chemistry. Three lecture and three laboratory hours per week. Prerequisite: Ch 314.
- Ch 324 Analytical Chemistry I** 5 credits
Theory, prediction and control of reactions in ionized systems; mass action, dynamic equilibrium, oxidation potential, electronegativity. Application of principles to classical qualitative methods. Three lecture and six laboratory hours per week. Prerequisite: Ch 113 or 116.
- Ch 325 Analytical Chemistry II** 5 credits
Principles and practices of modern methods of quantitative analysis including gravimetric and volumetric procedures. Three lecture and six laboratory hours per week. Prerequisite: Ch 324.
- Ch 326 Instrumental Analysis** 4 credits
Theory and techniques of instrumental methods representative of spectrophotometric electroanalytical and chromatographic techniques. Two four-hour laboratory periods including discussion of principles. Prerequisite: Ch 356.
- Ch 351 Survey of Physical Chemistry** 4 credits
A survey course treating the derivation, interpretation and application of the fundamental laws and theories of chemistry. Three lecture and three laboratory hours per week. Prerequisite: Ch 219 or 325.
- Ch 355 Physical Chemistry I** 4 credits
Application of physical principles to chemistry with theoretical, mathematical treatment; gases, laws of thermodynamics, thermochemistry, one-component systems, solutions. Three lecture and three laboratory hours per week. Prerequisites: Mt 133 and one year of college physics.
- Ch 356 Physical Chemistry II** 4 credits
Chemical equilibria, phase equilibria, kinetic theory, chemical kinetics, electrochemistry, ionic equilibria. Three lecture and three laboratory hours per week. Prerequisite: Ch 355.
- Ch 357 Physical Chemistry III** 4 credits
Quantum theory, molecular structure, spectroscopy, statistical mechanics, surface chemistry, crystals, photochemistry, nuclear chemistry. Three lecture and three laboratory hours per week. Prerequisite: Ch 356.
- *Ch 411 Basic Principles of Inorganic Chemistry** 6 credits
Structure of matter, energy levels, bonding, oxidation-reduction, acid-base, complex ions, equilibrium, electrochemistry, kinetics, nuclear chemistry. Five lecture and three laboratory hours per week. Prerequisite: Ch 116.

- *Ch 412 Chemistry of the Elements and Their Compounds** 6 credits
Treatment of periodic table in terms of electronic configuration, bonding orbitals, ionization potentials, kinetics, equilibrium, complex ions, thermodynamics. Five lecture and three laboratory hours per week. Prerequisite: Ch 116.
- Ch 415 Advanced Inorganic Chemistry** 3 credits
A survey of advanced topics in inorganic chemistry, with particular reference to contributions of atomic and molecular structural studies, thermodynamics and kinetics. Three lecture hours per week. Prerequisite: Ch 351 or 357.
- *Ch 419 Advanced Analytical Chemistry** 6 credits
Principles of reaction in ionized systems applied to analysis; advanced cation and anion analysis; volumetric and gravimetric methods; colorimetry, chromatography, ion exchange. Four lecture and six laboratory hours per week. Prerequisite: Ch 411.
- *Ch 435 Organic Chemistry** 6 credits
Study of functional groups in terms of electronic theory of valence, molecular orbital theory, free radical reactions, energetics, kinetics, ionization, mechanisms of displacement, steric effects. Five lecture and three laboratory hours per week. Prerequisite: Ch 237.
- Ch 436 Advanced Organic Chemistry** 4 credits
Physical organic treatment of factors influencing reactivity, mechanistic principles of reaction, evaluation and significance of thermodynamic variables; advanced laboratory techniques and their principles. Three lecture and three laboratory hours per week. Prerequisites: Ch 237 and 357.
- Ch 455 Biochemistry I** 4 credits
Composition and metabolism of carbohydrates, lipids, proteins, enzymes, and body fluids. Three lecture and three laboratory hours per week. Prerequisites: Ch 226 or Ch 236.
- Ch 456 Biochemistry II** 4 credits
Detailed consideration of selected biochemical topics of contemporary research significance. Three lecture and three laboratory hours per week. Prerequisite: Ch 455 or permission of the instructor.
- Ch 460 Advanced Physical Chemistry** 3 credits
Quantum chemistry, vibrational and rotational energies, absorption and emission of radiation, molecular symmetry, group theory, electronic spectra. Three lectures per week. Prerequisite: Ch 357.
- Ch 461 Radiochemistry** 2 credits
Theory of radioactivity, use of radioisotopes in studying chemical reactions and structure. Six laboratory hours per week including discussion of principles. Prerequisite: Ch 351 or 357.
- Ch 470 Clinical Chemistry—Instrumentation** 4 credits
Theory and techniques of electro-spectrophotometric methods: infrared, ultraviolet and visible, colorimetry, fluorimetry, flame photometry, densitometry, atomic adsorption, electrophoretic techniques, practical use of automated instrumentation. Two lecture and six laboratory hours per week. Prerequisites: Ch 219 and 356 or permission of instructor.
- Ch 471 Clinical Chemistry—Methods** 4 credits
Comparative survey of significant procedures of analysis of carbohydrates, nitrogenous materials, lipids, electrolytes, hormones and enzyme activities. Three lecture and three laboratory hours per week. Prerequisite: Ch 456 or permission of instructor.
- Ch 491 Clinical Practice** 2 credits
Ch 492 Clinical Practice 2 credits
Ch 493 Clinical Practice 2 credits
Practical experience in approved hospital clinical laboratory. Six laboratory hours per week. Prerequisite: Permission of department chairman.
- Ch 495 Special Topics in Chemistry** 2-4 credits
Directed reading and/or lectures on various topics at the advanced level. Prerequisite: Permission of instructor.
- Ch 497 Undergraduate Research I** 2 credits
Ch 498 Undergraduate Research II 2 credits
Ch 499 Undergraduate Research III 2 credits
Literature and laboratory investigation of a basic research problem. Six laboratory hours per week. Prerequisite: Permission of department chairman.
- *Ch 511 The Chemical Bond** 6 credits
Theory of resonance, electronic structure, polar bonds, directed covalent bond, complex bond orbitals, structure of molecules and crystals, metallic bond, one-electron and three-electron bonds, hydrogen bond. Five lecture hours and one seminar period per week. Prerequisite: Ch 411.
- *Ch 535 Modern Organic Chemistry** 6 credits
Theoretical treatment of mechanism and structure, stereochemistry, thermodynamic properties, steric effects, resonance, sigma constants, aromatic substitution, conformation and large-ring structure, organometallics. Five lecture and three laboratory hours per week. Prerequisite: Ch 435.
- *Ch 555 Chemical Thermodynamics** 6 credits
Foundations of theory of thermodynamics, enthalpy, internal energy, free energy, entropy, work function. Application to states of matter, equilibrium and electrochemistry. Five lecture hours and one seminar period per week. Prerequisites: Ch 351 and Mt 231.

Graduate Courses

- *Ch 556 Chemical Kinetics** 6 credits
Quantitative study of rates of reaction and factors affecting rates; mechanism of elementary processes, gas-phase reactions, solution reactions, complex reactions, catalysis, oxidation. Five lecture hours and one seminar period per week. Prerequisites: Ch 351 and Mt 231.
- *Ch 560 Nuclear Chemistry** 6 credits
Theory of radioactivity and radioisotope techniques; nuclear radiations, detection of radiation, radiological safety, calibration of detectors, rates of radioactive processes, radiochemical separations. Four lecture and six laboratory hours per week. Prerequisites: Ch 351 and Mt 231.
- *Ch 590 Research** 6-12 credits
Literature and laboratory investigation of a basic research problem. Preparation of a written report. Three hours per credit per week. Prerequisite: Permission of instructor.

*Offered summer only for high school teachers in the master's degree program in natural science.

Community Services

Naomi Goodard, M.S.W., Director

Objectives

The Community Services program, an interdepartmental undertaking involving the departments of economics, political science, psychology, and sociology, is designed to give the academic and professional background for beginning-level positions in the areas of welfare, probation and parole, rehabilitation, corrections, mental institutions and community mental health centers, social security, old age facilities, youth services, employment counseling and various economic opportunity programs. The program is not an apprenticeship system to train workers for specific jobs, but a basic career preparation which leaves details of a particular job to in-service training by the staff development facilities of the particular agency. Courses and supervised field experience are aimed at giving those principles, skills, knowledge and attitudes common to workers in most of the above fields.

Degree Offered

Bachelor of Arts in Community Services

General Program Requirements

Candidates must satisfy the general core curriculum requirements of the University as given on page 24 of the Bulletin and those of the College of Arts and Sciences on page 32.



Degree Requirements

A minimum of 60 hours of social science is required, selected under the direction of the Program Adviser. These should include the following courses: Sociology 101, 102, 260, 280, and 375, 376, 377; Psychology 100, 201, 210 or 315, 460; Political Science 160, 252 and 214 or 250; Economics 271, 272. Field placements in at least two different social or government agencies; coordinating seminars concurrent with the field experiences.

Recommended electives are the following: Sociology 256, 257, 258, 266, 430; Psychology 210, 322, 380, 427, 490; Business 230 and a course in social or cultural anthropology.

Bachelor of Arts in Community Services

Freshman year

English 100, 160 and core elective	12 hours
History 101, 102 and core elective	12 hours
Philosophy 125, 150, 175	12 hours
Political Science 160	4 hours
Psychology 100	4 hours
Sociology 101	4 hours

Sophomore year

Economics 271, 272	8 hours
English core elective	4 hours
Philosophy 225, 250	8 hours
Psychology or Sociology 201	4 hours
Science or Mathematics and elective	12 hours
Sociology 102, 260	8 hours
Theology 120	4 hours

Junior year

Language or Fine Arts	12 hours
Political Science 214 or 250	4 hours
Psychology 210 or 315 and 460	8 hours
Sociology 280, 375, 376	12 hours
Theology 220, 320 and core elective	12 hours

Senior year

Community Services 478, 479	8 hours
Field Experience I and II	16 hours
Political Science 252	4 hours
Social Science electives	8 hours

Total.....180 hours

Community Services Courses

CS 378	Field Experience I	8 credits
CS 379	Field Experience II	8 credits
CS 380	Field Experience III	2-8 credits
Placement in a governmental or other social agency. A minimum of two such experiences is required, with which the coordinating seminars must be taken concurrently. The required experiences must be in diverse areas.		
CS 478	Coordinating Seminar I	4 credits
CS 479	Coordinating Seminar II	4 credits
To be taken concurrently with the field experiences. Discussion and analysis of practices, programs and objectives of various agencies and institutions. Comparison of policies and procedures.		
CS 491	Special Topics	2-4 credits
CS 495	Individual Research	2-4 credits

Objectives

The specific objectives of the English department are to train the student in the practice and interpretation of his native language, to guide him in a detailed knowledge of the periods of English literature and to integrate both purposes with a genuine awareness of the broader areas of human culture. Hence, the curriculum is designed to enable graduates to excel in those professions in which an accurate knowledge of English is essential. The requirements are further planned to provide period courses in the areas recommended by most American universities to applicants for graduate standing.

Degrees Offered

- Bachelor of Arts
- Master of Arts
- Master of Arts (Teaching)

General Program Requirements

Students in English must satisfy the core curriculum requirements of the University as specified on page 24 of this bulletin and those of the College of Arts and Sciences on page 32. Required sequences are 12 hours of social science, either 12 hours of science or 8 hours of mathematics, 12 hours of French or German and 12 hours of fine arts.

Departmental Requirements

- BACHELOR OF ARTS**—48 hours of English which must include the following basic courses: En 100, 160, 170, and 180 or 190. The student must also elect one of the following concentrations: British or American Literature or English Teaching. Course requirements for each are as follows:
- BRITISH OR AMERICAN LITERATURE**—En 335 or 336; three courses in the 300 series representing three different literary periods (American must include En 380 or 382); three courses in the 400 series representing figures of different literary forms and periods; and En 490 or 492.
- TEACHING MAJOR**—(School of Education)—En 220 or 230, 301, 307, 330, 380 or 382; in addition stu-

dents preparing for secondary education will take one course in the 300 series, one course in the 400 series, and En 490 or 492.

UNDERGRADUATE MINOR—16 hours of English beyond En 160, 170, 180 or 190 which must include three courses in the 300 series and one course in the 400 series as specified by the department.

MASTER OF ARTS—35 hours of English of which 25 hours must be in courses numbered 500 or above. A maximum of 5 quarter credits may be transferred from an accredited institution. Consult the Graduate School section for additional requirements. Details of the master's program may be obtained from the English department.

MASTER OF ARTS (TEACHING)—40 hours of English of which 25 hours must be in graduate courses. En 501, 505, 507 are required. There is no language requirement, no thesis and no final examination.

Bachelor of Arts

Freshman year

- English 100, 160, 170..... 12 hours
- Fine Arts 101, 102, 103..... 12 hours
- History 101, 102 and core elective..... 12 hours
- Philosophy 125, 150, 175..... 12 hours

Sophomore year

- English 180 or 190, 335 or 336, 300 series... 12 hours
- Science or mathematics and elective..... 12 hours
- Social Science 12 hours
- Philosophy 225, 250..... 8 hours
- Theology 120 4 hours

Junior year

- English 300 series..... 8 hours
- English 400 series..... 4 hours
- French or German 101, 102, 103..... 12 hours
- Minor 12 hours
- Theology 220, 320 and core elective..... 12 hours

Senior year

- English 400 series..... 8 hours
- English 490 or 492..... 4 hours
- Minor 8 hours
- Electives 16 hours

Total.....180 hours

English Courses

- En 100 Freshman English** 4 credits
English composition: writing, chiefly expository, emphasizing critical thinking and mastery of style. Introduction to the criticism of literature.
- En 140 The World's Great Masters I** 4 credits
- En 150 The World's Great Masters II** 4 credits
(I) A study of the masterpieces in Western culture with emphasis on Greek, Roman and Italian classics; (II) French, German, and Spanish classics. Prerequisite: En 100.
- En 160 Great English Authors I** 4 credits
- En 170 Great English Authors II** 4 credits
(I) A study of major British writers from Chaucer to Swift. (II) Wordsworth to Yeats. Prerequisite: En 100.
- En 180 Great American Authors I** 4 credits
- En 190 Great American Authors II** 4 credits
(I) A study of the major American writers to Melville. (II) Melville to Eliot. Prerequisite: En 100.
- En 203 Vocabulary Building** 4 credits
A practical course in vocabulary building. Emphasis on etymology, Latin and Greek roots, prefixes and suffixes. Prerequisites: En 160.
- En 205 Creative Writing** 4 credits
A study of and guided practice in forms of creative writing. Prerequisites: En 160, 170, 180 or 190.

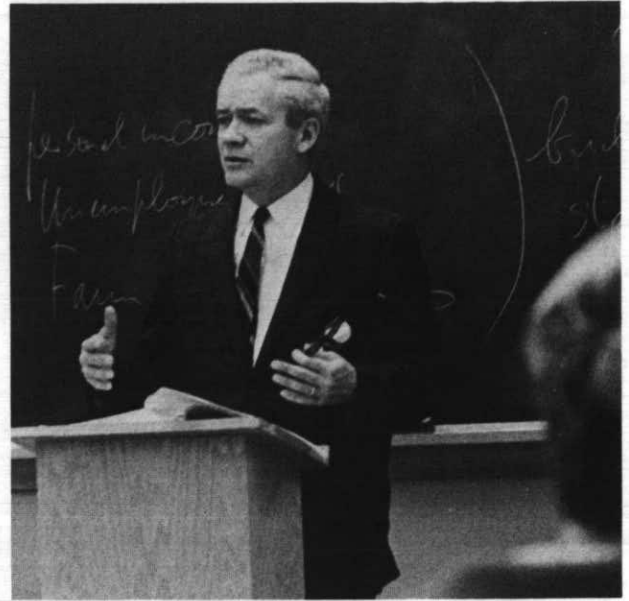
- En 220 Introduction to Poetry** 4 credits
A general introduction to the study of poetry with special emphasis on appreciation, form and technique. Prerequisites: En 160, 170, 180 or 190.
- En 230 Introduction to Fiction** 4 credits
A general introduction to the study of fiction with special emphasis on appreciation, form and technique. Prerequisites: En 160, 170, 180 or 190.
- En 301 Advanced Rhetoric and the Teaching of English** 4 credits
A study of the development of English grammar and rhetoric and their application to writing with emphasis on methods of teaching. Prerequisites: En 160, 170, 180 or 190.
- En 305 Advanced Creative Writing** 4 credits
Concentrated study and practice in one form of creative writing. Prerequisites: En 160, 170, 180 or 190.
- En 307 Foundations of American English** 4 credits
A study of the historical development of modern American English. Prerequisites: En 160, 170, 180 or 190.
- En 310 Middle English Literature** 4 credits
A study of Chaucer's "Canterbury Tales." Prerequisites: En 160, 170, 180 or 190.
- En 312 Medieval Literature** 4 credits
Studies of the prose and poetry of the period other than Chaucer's "Canterbury Tales." Prerequisites: En 160, 170, 180 or 190.
- En 320 Renaissance Literature I** 4 credits
- En 322 Renaissance Literature II** 4 credits
(I) Studies in the prose and poetry of the period. (II) Non-Shakespearean dramas between 1550 and 1642. Prerequisites: En 160, 170, 180 or 190.
- En 330 Introductions to Shakespeare** 4 credits
Readings in the Great Plays. Prerequisites: En 160, 170, 180 or 190.
- En 335 Shakespeare's Comedies** 4 credits
Comedies and Histories. Prerequisites: En 160, 170, 180 or 190.
- En 336 Shakespeare's Tragedies** 4 credits
Tragedies. Prerequisites: En 160, 170, 180 or 190.
- En 340 Milton** 4 credits
A study of the prose and early poetry of Milton. Prerequisites: En 160, 170, 180 or 190.
- En 345 Seventeenth Century Literature** 4 credits
Studies of the prose and poetry of the period. Prerequisites: En 160, 170, 180 or 190.
- En 350 Eighteenth Century Literature** 4 credits
Studies of the prose and poetry of the period. Prerequisites: En 160, 170, 180 or 190.
- En 360 Early Nineteenth Century** 4 credits
Studies of the prose and poetry of the English Romantic Period. Prerequisites: En 160, 170, 180 or 190.
- En 370 Late Nineteenth Century** 4 credits
Studies of the prose and poetry of the Victorian Period. Prerequisites: En 160, 170, 180 or 190.
- En 380 Major American Poets** 4 credits
A study of American poetry from its beginning to modern times. Prerequisites: En 160, 170, 180 or 190.
- En 382 Major American Novelists** 4 credits
A study of American fiction from its beginning to modern times. Prerequisites: En 160, 170, 180 or 190.
- En 390 Eighteenth Century Novel** 4 credits
A study of the major novelists of the period. Prerequisites: En 160, 170, 180 or 190.
- En 392 Nineteenth Century Novel** 4 credits
A study of the major novelists of the period. Prerequisites: En 160, 170, 180 or 190.
- En 394 Twentieth Century Novel** 4 credits
A study of the major novelists of the period. Prerequisites: En 160, 170, 180 or 190.
- En 396 Contemporary Literature** 4 credits
Studies in the prose and poetry of the period. Prerequisites: En 160, 170, 180 or 190.
- En 398 Modern Drama** 4 credits
Studies in the major contemporary dramatists. Prerequisites: En 160, 170, 180 or 190.
- *En 400 Language—Special Studies** 3 credits
- *En 401 Composition—Special Studies** 3 credits
- *En 402 Literature—Special Studies** 3 credits
- *En 403 English Workshop** 1 credit
- En 410 Medieval English Literature** 4 credits
Advanced studies in Chaucer. Prerequisite: 12 hours in 300 series.
- En 420 Renaissance Literature** 4 credits
Advanced studies in Sidney, Spenser and their contemporaries. Prerequisite: 12 hours in the 300 series.
- En 422 Shakespeare's Contemporaries** 4 credits
Advanced studies of Jonson, Marlowe and their contemporaries. Prerequisite: 12 hours in the 300 series.
- En 435 Shakespeare's Comedies and Histories** 4 credits
Advanced studies. Prerequisite: 12 hours in the 300 series.
- En 436 Shakespeare's Tragedies** 4 credits
Advanced studies. Prerequisite: 12 hours in the 300 series.
- En 440 Milton** 4 credits
Advanced studies in the major works. Prerequisite: 12 hours in the 300 series.
- En 445 Metaphysical Poetry** 4 credits
Advanced studies in Donne and his contemporaries. Prerequisite: 12 hours in the 300 series.
- En 450 Eighteenth Century Literature** 4 credits
Advanced studies in the Augustan Age. Prerequisite: 12 hours in the 300 series.
- En 460 Early Nineteenth Century I** 4 credits
Advanced studies in Wordsworth, Coleridge, and their contemporaries. Prerequisite: 12 hours in the 300 series.

*Offered summer only for the National Defense Education Act English Institute.

- En 462 Early Nineteenth Century II** 4 credits
Advanced studies in Byron, Shelley, Keats and their contemporaries. Prerequisite: 12 hours in the 300 series.
- En 470 Late Nineteenth Century** 4 credits
Advanced studies in Tennyson, Browning, Arnold and their contemporaries. Prerequisite: 12 hours in the 300 series.
- En 480 Early American Literature** 4 credits
Advanced studies in Taylor, Freneau, Franklin and their contemporaries. Prerequisite: 12 hours in the 300 series.
- En 482 Nineteenth Century American Literature I** 4 credits
Advanced studies in Poe, Emerson, Thoreau and their contemporaries. Prerequisite: 12 hours in the 300 series.
- En 483 Nineteenth Century American Literature II** 4 credits
Advanced studies in Melville, Hawthorne, Twain and their contemporaries. Prerequisite: 12 hours from the 300 series.
- En 484 Twentieth Century American Literature** 4 credits
Advanced studies in James, Faulkner, Hemingway and their contemporaries. Prerequisite: 12 hours in the 300 series.
- En 486 Modern Poetry** 4 credits
Advanced studies in Yeats, Eliot, Auden and their contemporaries. Prerequisite: 12 hours of 300 series.
- En 490 Literary Criticism** 4 credits
An historical study of the theories of the great critics. Prerequisite: 32 hours of major completed.
- En 492 Contemporary Criticism** 4 credits
A study of modern critical theories since 1917. Prerequisite: 32 hours of major completed.
- En 495 Seminar** 4 credits
- En 496 Seminar** 4 credits
- En 497 Seminar** 4 credits
Special topics in English. Prerequisites: upper division standing in English and permission of department chairman.
- En 498 Individual Research** 4-8 credits
- En 499 Individual Research** 4-8 credits
Prerequisites: Senior standing in English and permission of department chairman.

Graduate Courses

- En 500 Introduction to Graduate English Studies** 5 credits
- En 501 Studies in Rhetoric** 5 credits
- En 505 Comparative Grammars** 5 credits
- En 507 History of the English Language** 5 credits
- En 508 Old English** 5 credits
- En 509 Old English Poetry** 5 credits
- En 510 Seminar in Chaucer** 5 credits
- En 512 Medieval Literature** 5 credits
- En 520 The English Renaissance** 5 credits



- En 522 Studies in Elizabethan Drama (non-Shakespearean)** 5 credits
- En 535 Seminar in Shakespeare (Comedies & Histories)** 5 credits
- En 536 Seminar in Shakespeare (Tragedies)** 5 credits
- En 540 Seminar in Milton** 5 credits
- En 545 Studies in Seventeenth Century Literature** 5 credits
- En 550 Studies in Eighteenth Century Literature** 5 credits
- En 560 Studies in English Romanticism** 5 credits
- En 570 Studies in Victorian Literature** 5 credits
- En 580 Colonial American Literature** 5 credits
- En 581 Studies in the American Transcendentalists** 5 credits
- En 582 Contemporary American Literature** 5 credits
- En 584 Studies in the English Novel** 5 credits
- En 586 Modern Poets** 5 credits
- En 588 Contemporary Dramatists** 5 credits
- En 590 Theories of Criticism** 5 credits
- En 593 Special Topics** 5 credits
- En 594 Special Topics** 5 credits
- En 595 Special Topics** 5 credits
- En 596 Individual Research** 5-10 credits
- En 597 Individual Research** 5-10 credits
- En 598 Individual Research** 5-10 credits
- En 599 Thesis** 10 credits

Objectives

The Fine Arts department provides that element of a liberal education which distinguishes the truly refined and cultured person. By studying the masterpieces of art, drama and music, the student is led to an awareness of one of man's superior intellectual powers, his creative imagination; by means of practical experience in the fine arts he is enabled to understand the operation of that power.

By observing the characteristics of the arts in proper historical perspective, the student learns how changes of style reflect the changing attitudes, ideas, ideals and social conditions of various historical periods. Thus the fine arts become an integrative study sharing in the common goals of all liberal arts subjects. The department does not offer professional training such as that provided by the art academy, school of drama or conservatory of music. Within the strong liberal arts foundation are provided the basic competencies in the fine arts areas. The student's ability to pursue advanced study in his field will depend upon the nature of his talents and the extent of special gifts for his subject.

Degrees Offered

- Bachelor of Arts—Subject major in drama
- Bachelor of Arts—Area major in fine arts with concentration in art or music
- Bachelor of Arts—Area major in fine arts

General Program Requirements

Students in fine arts must satisfy the core curriculum requirements of the University given on page 24 of this bulletin and those of the College of Arts and Sciences on page 32. Required sequences are 12 hours of fine arts, 12 hours of social science and (except for drama majors) 12 hours of language.

Departmental Requirements

- BACHELOR OF ARTS—*Subject major in drama*—72 hours which must include Dr 102, 160, 202, 220, 221, 222, 260, 265, 321, 325, 420, 450, 451, 461, 462; En 335, 336 (substitute for the fourth core course in English); Art 231, 233; Mu 202. Each student in this program must participate in at least one major production per year. During the senior year he must present a project in one of the fields of drama which will be judged and evaluated by the fine arts faculty.
- BACHELOR OF ARTS—*Area major in fine arts, concentration in art*—64 hours which must include Art 221, 222, 223, 231, 232, 233, 311, 312, and 28 elective hours in art; 2 courses selected from Mu 200-214; Dr 160, 220, 325. A grade point average of 2.5 must be maintained in all art courses.
- BACHELOR OF ARTS—*Area major in fine arts, concentration in music*—64 hours which must include Mu

202, 215, 216, 217, 315, 316, 372, 373, 2 courses selected from Mu 415, 416, 417, 2 corresponding courses selected from Mu 370, 371, 374; Art 221, 231 and 4 elective hours in art; Dr 160, 220, 325. A grade point average of 2.5 must be maintained in all music courses and a basic piano examination must be taken by the end of the sophomore year. Students who fail this examination will be allowed to repeat it upon petition to the department. The examination must be passed as a requirement for graduation. Credits for piano lessons or for chorus may be used only as electives.

BACHELOR OF ARTS—*Area major in fine arts*—60 hours which must include Art 221, 222, 223, 231, 232, 233 and 8 hours in the areas of painting, graphics and/or sculpture; Dr 160, 220, 221, 260, 325 and 1 course selected from Dr 202, 222, 265, 450, 451, 462; Mu 215, 216 and 3 courses selected from Mu 200-214.

TEACHING SUBJECT, ELEMENTARY, ART (School of Education)—25 hours which must include Art 221, 231, 311, 312, 334, 346, 351, 370 and 4 elective hours in art.

TEACHING SUBJECT, ELEMENTARY, MUSIC (School of Education)—24 hours which must include FA 103, Mu 158, 159, 160, 215, 216, 6 hours in piano (Mu 110) and 3 hours in chorus (Mu 130).

TEACHING AREA, ELEMENTARY, FINE ARTS (School of Education)—25 hours which must include Art 221, 231, 334, 346, 351, 370; Mu 215, 216, 2 hours in piano (Mu 110) and 2 hours in chorus (Mu 130).

UNDERGRADUATE MINOR IN ART—22 hours which must include Art 221, 231, 311, 312, 334, 346, 351 and 4 elective hours in art.

UNDERGRADUATE MINOR IN DRAMA—24 hours which must include Dr 160, 220, 221, 260, 325, 450, 451.

UNDERGRADUATE MINOR IN MUSIC—24 hours which must include Mu 202, 215, 216, 217, 1 course selected from Mu 200-214 and 4 hours in piano (Mu 110).

UNDERGRADUATE MINOR IN SPEECH—24 hours which must include Sph 100, 110, 202, 204, 310, 497.

Bachelor of Arts—Subject Major in Drama

Freshman year	
English 100, 160, 170.....	12 hours
Fine Arts 101, 102, 103.....	12 hours
History 101, 102 and core elective.....	12 hours
Philosophy 125, 150, 175.....	12 hours
Sophomore year	
Drama 160, 220, 221, 222.....	15 hours
Philosophy 225, 250.....	8 hours
Psychology 100, 310.....	8 hours
Science or mathematics and elective.....	12 hours
Theology 120.....	4 hours

Junior year	
Art 231, 233.....	4 hours
Drama 102, 202, 260, 265, 321.....	20 hours
English 335, 336.....	8 hours
Sociology 200.....	4 hours
Theology 220, 320 and core elective.....	12 hours
Senior year	
Drama 325, 420, 450, 451, 461, 462.....	21 hours
Music 202.....	4 hours
Electives.....	12 hours
Total.....	
180 hours	

**Bachelor of Arts—Area Major in Fine Arts,
Concentration in Art**

Freshman year	
English 100, 160 and core elective.....	12 hours
Fine Arts 101, 102, 103.....	12 hours
History 101, 102 and core elective.....	12 hours
Philosophy 125, 150, 175.....	12 hours
Sophomore year	
Art 221, 222, 223, 231, 232, 233.....	12 hours
Philosophy 225, 250.....	8 hours
Science or mathematics and elective.....	12 hours
Social Science.....	12 hours
Theology 120.....	4 hours
Junior year	
Art 311, 312 and art electives.....	12 hours
Drama 160, 220.....	7 hours
Language 101, 102, 103.....	12 hours
Music elective selected from Mu 200-214.....	4 hours
Theology 220, 320 and core elective.....	12 hours
Senior year	
Art electives.....	24 hours
Drama 325.....	1 hour
English core elective.....	4 hours
Music elective selected from Mu 200-214.....	4 hours
Elective.....	4 hours
Total.....	
180 hours	

**Bachelor of Arts—Area Major in Fine Arts,
Concentration in Music**

Freshman year	
English 100, 160 and core elective.....	12 hours
Fine Arts 101, 102, 103.....	12 hours
History 101, 102 and core elective.....	12 hours
Philosophy 125, 150, 175.....	12 hours
Sophomore year	
Music 215, 216, 217.....	12 hours
Philosophy 225, 250.....	8 hours

- FA 101 Fine Arts Sequence—Art** 4 credits
A synoptic view of art history; period and national styles; principles and implications of design, with cross-reference to music and drama.
- FA 102 Fine Arts Sequence—Drama** 4 credits
An introduction to drama as an art form. A historical approach with emphasis on major periods, plays and philosophies. Specifically designed for non-drama majors and minors.
- FA 103 Fine Arts Sequence—Music** 4 credits
An introduction to music as an art and as a literature, with emphasis upon historical and cultural correlations.

Science or mathematics and elective.....	12 hours
Social Science.....	12 hours
Theology 120.....	4 hours

Junior year	
Art 221, 231.....	4 hours
Drama, 160, 220.....	7 hours
Music 202, 315, 316, 372, 373.....	20 hours
Theology 220, 320 and core elective.....	12 hours
Electives.....	4 hours

Senior year	
Art electives.....	4 hours
Drama 325.....	1 hour
English core elective.....	4 hours
Language 101, 102, 103.....	12 hours
Music electives selected from Mu 370, 371, 374.....	8 hours
Music electives selected from Mu 415-417.....	8 hours
Total.....	
180 hours	

Bachelor of Arts—Area Major in Fine Arts

Freshman year	
English 100, 160 and core elective.....	12 hours
Fine Arts 101, 102, 103.....	12 hours
History 101, 102 and core elective.....	12 hours
Philosophy 125, 150, 175.....	12 hours
Sophomore year	
Art 221, 222, 223 and elective in painting, graphics or sculpture.....	8 hours
Drama 160, 260.....	7 hours
Music 215, 216.....	8 hours
Philosophy 225, 250.....	8 hours
Social Science.....	12 hours
Theology 120.....	4 hours
Junior year	
Art 231, 232, 233 and elective in painting, graphics or sculpture.....	8 hours
Drama 220, 221.....	8 hours
Music electives selected from Mu 200-214.....	8 hours
Science or mathematics and elective.....	12 hours
Theology 220, 320 and core elective.....	12 hours
Senior year	
Art electives in painting, graphics or sculpture..	4 hours
Drama 325 and elective selected from Dr 202, 222, 265, 450, 451, 462.....	5 hours
English core elective.....	4 hours
Language 101, 102, 103.....	12 hours
Music elective selected from Mu 200-214.....	4 hours
Electives.....	8 hours
Total.....	
180 hours	

Fine Arts Courses

- FA 400 Special Topics** 2-8 credits
- Art Courses**
- Art 221 Drawing** 2 credits
- Art 222 Drawing** 2 credits
- Art 223 Drawing** 2 credits
Studies of line and value in the delineation of form; training in awareness and perception; structure and space indication; essential relationships of organic forms.
- Art 231 Design** 2 credits
- Art 232 Design** 2 credits

- Art 233 Design** 2 credits
Primary concepts and analysis of structure; problems of contemporary design; form in three-dimensional design.
- Art 311 History of Art** 4 credits
- Art 312 History of Art** 4 credits
A survey of the arts of the Western world from the earliest times to the Renaissance and from the Renaissance to the present.
- Art 321 Advanced Drawing** 2 credits
- Art 322 Advanced Drawing** 2 credits
- Art 323 Advanced Drawing** 2 credits
Study of the human form; special problems in group composition. Prerequisite: Art 223.
- Art 331 Advanced Design** 2 credits
- Art 332 Advanced Design** 2 credits
- Art 333 Advanced Design** 2 credits
Problems of practical application; advertising art; synthesis and research. Prerequisite: Art 233.
- Art 334 Graphics** 2 credits
- Art 335 Graphics** 2 credits
- Art 336 Graphics** 2 credits
Principals and techniques of print-making; special problems; synthesis and research.
- Art 346 Painting** 2 credits
- Art 347 Painting** 2 credits
- Art 348 Painting** 2 credits
A study of the principles and practices of rendering in paint; complex composition; advanced problems.
- Art 351 Sculpture** 2 credits
- Art 352 Sculpture** 2 credits
- Art 353 Sculpture** 2 credits
Principles and practices leading to a realization of the nature of form; dependence of design on materials; advanced problems.
- Art 446 Advanced Painting** 2 credits
- Art 447 Advanced Painting** 2 credits
- Art 448 Advanced Painting** 2 credits
Experimental research toward the development of a creative and personalized idiom; synthesis and research. Prerequisite: Art 348.
- Art 449 Advanced Painting** 2 credits
Advanced work in painting. Prerequisites: Art 448; permission of department chairman.
- Art 451 Advanced Sculpture** 2 credits
- Art 452 Advanced Sculpture** 2 credits
- Art 453 Advanced Sculpture** 2 credits
Experimental research toward the development of a creative and personalized idiom; synthesis and research. Prerequisite: Art 353.
- Art 454 Advanced Sculpture** 2 credits
Advanced work in sculpture. Prerequisites: Art 453; permission of department chairman.
- Art 471 Independent Study** 1-4 credits
Advanced work in academic or experimental research. By arrangement with permission of department chairman. Prerequisite: Advanced standing in art.

Drama Courses

- Dr 100 Introduction to the Theatre** 3 credits
An overview of drama as produced; discussion of the role of the playwright, director, actor and technicians in relationship to their duties and obligations to the theatre. Drama majors and minors will take this course in place of FA 102.

- Dr 102 Speech for the Theatre** 4 credits
Speech used in the formal theatre. Theory, practice and technique.
- Dr 160 Introduction to Technical Theatre** 3 credits
A study of the specific technical areas of theatre and their inter-relation in production.
- Dr 202 Introduction to Oral Interpretation** 4 credits
The basic notions of interpreting the written word; practice in reading and memorization of prose, poetry and drama.
- Dr 220 Pantomime** 4 credits
Study and practice of this form of expression as a living art and as a basic part of all acting.
- Dr 221 Acting** 4 credits
- Dr 222 Acting** 4 credits
Introduction to the art of acting and the relationship between the actor and director. 221—principles and practice in basic acting details and character development. 222—study and practice in modern realistic acting. Prerequisites: Dr 220; 221 for 222.
- Dr 260 Fundamentals of Scenery Construction** 4 credits
Lecture-discussion of the technical aspects of dramatic productions accompanied by a laboratory period in the actual building and painting of various types of stage equipment and properties. Prerequisite: Dr 160.
- Dr 265 Lighting** 4 credits
Theory and application of light to all types of productions. Prerequisite: Dr 160.
- Dr 321 Advanced Acting** 4 credits
Theory and practice in period style; Shakespearean tragedy, high and low comedy. Prerequisite: Dr 222.
- Dr 325 Rehearsal and Performance Technique** 1 credit
For performers and crew chief members of official University productions. No more than two credits may be received in any four-quarter period. Maximum, eight credits. Prerequisite: Permission of instructor.
- Dr 405 Readers Theatre Workshop** 1 credit
Participation in programs and recitals on and off campus; material from literature and drama, both prose and poetry. Maximum, six credits. Prerequisite: Permission of instructor.
- Dr 420 Directing** 4 credits
Theory and practice in directing various styles of drama; practical application. Prerequisite: Dr 321.
- Dr 450 Theatre History I** 4 credits
- Dr 451 Theatre History II** 4 credits
Great playwrights and representative plays correlated with the history of the theatre. I—the Golden Age of Greece to the Elizabethan era; II—Restoration to the present.
- Dr 461 Scene Design** 4 credits
Theory and creation of design for stage productions of all types. Prerequisites: Dr 260, 265.
- Dr 462 Costume** 4 credits
Discussion of costume history; design and execution of all styles of stage costume. Laboratory work.
- Dr 498 Special Topics** 2-4 credits
Prerequisite: Permission of instructor.
- Dr 499 Undergraduate Research** 2-4 credits
Prerequisite: Permission of instructor.

Music Courses

- Mu 110 Piano Lessons** 1 credit
- Mu 111 Vocal Lessons** 1 credit

- Mu 114 Music Fundamentals** 3 credits
Rudiments of music, with emphasis upon elementary school needs.
- Mu 130 University Chorus** 1 credit
- Mu 158 Teaching Methods I** 1 credit
- Mu 159 Teaching Methods II** 1 credit
- Mu 160 Teaching Methods III** 1 credit
Basic techniques and principles for the teaching of music on the elementary school level. For music education students only.
- Mu 195 Concert Music** 2 credits
A brief survey of the current concert repertoire for students unable to take FA 103.
- Mu 196 Studies in American Music** 2 credits
A survey from the early folksong to the vocal and instrumental music of the present.
- Mu 200 Music of J. S. Bach** 4 credits
Analysis of his instrumental and vocal music, particularly as reflecting the ultimate refinement of Baroque form. Prerequisite: FA 103.
- Mu 202 History of Opera** 4 credits
A consideration of the basic elements in the combination of music and drama, with a historical survey of the various solutions offered to the problems involved. Prerequisite: FA 103.
- Mu 203 Chamber Music** 4 credits
Selected topics in the chamber literature of the Classic, Romantic and Contemporary periods, with analysis of the special characteristics and qualities of the small instrumental ensemble. Prerequisite: FA 103.
- Mu 204 Piano Music** 4 credits
Selected topics in the piano literature of the Classic, Romantic and Contemporary periods, with consideration of the various forms and styles to be found in that literature. Prerequisite: FA 103.
- Mu 205 Symphonies of Beethoven** 4 credits
Nine works, preceded by a brief consideration of symphonic form. Prerequisite: FA 103.
- Mu 206 String Quartets of Beethoven** 4 credits
Selected examples from the sixteen quartets, showing more clearly than any other works of the composer his artistic growth and development. Prerequisite: FA 103.
- Mu 214 Introduction to 20th-Century Music** 4 credits
Techniques, forms and styles, with emphasis upon the works of Stravinsky, Bartok and Schonberg. Prerequisite: FA 103.
- Mu 215 Theory I** 4 credits
- Mu 216 Theory II** 4 credits
Basic musicianship, stressing scales and tonality, modes, intervals, chords, rhythm, form. Knowledge of these concepts will be acquired by listening, singing, analysis, discussion and keyboard practice.
- Mu 217 Theory III** 4 credits
- Mu 315 Theory IV** 4 credits
- Mu 316 Theory V** 4 credits
Harmonic style of the common-practice period, from the establishment of the principle of tonality to the extension of that principle in the late nineteenth century. The five theory courses can be taken only in proper sequence. Mu 315 is to be taken concurrently with Mu 372; Mu 316 is to be taken concurrently with Mu 373.
- Mu 370 History and Literature of Music I—
Medieval and Renaissance Periods** 4 credits
For area majors concentrating in music. To be taken concurrently with Mu 415.
- Mu 371 History and Literature of Music II—
Baroque Period** 4 credits
For area majors concentrating in music. To be taken concurrently with Mu 416.
- Mu 372 History and Literature of Music III—
Classic Period** 4 credits
For area majors concentrating in music. To be taken concurrently with Mu 315.
- Mu 373 History and Literature of Music IV—
Romantic Period** 4 credits
For area majors concentrating in music. To be taken concurrently with Mu 316.
- Mu 374 History and Literature of Music V—
20th Century** 4 credits
For area majors concentrating in music. To be taken concurrently with Mu 417.
- Mu 415 Modal Counterpoint** 4 credits
Sixteenth-century contrapuntal style as found in the music of Palestrina and his contemporaries. To be taken concurrently with Mu 370 by area majors concentrating in music.
- Mu 416 Tonal Counterpoint** 4 credits
Eighteenth-century contrapuntal style as found in the music of Bach and his contemporaries. To be taken concurrently with Mu 371 by area majors concentrating in music.
- Mu 417 Contemporary Counterpoint** 4 credits
Contrapuntal techniques as used by composers in the twentieth century. To be taken concurrently with Mu 374 by area majors concentrating in music.
- Mu 425 Special Topics** 1-4 credits
- Speech Courses**
- Sph 100 Creative Speech** 4 credits
Students are encouraged to use ideas from their storehouse of knowledge in order to create new insights and concepts. Theory is learned through performance in a creative, communicative setting.
- Sph 110 Speech Organization** 4 credits
Emphasis on theory and organization of material. Prerequisite: Sph 100.
- Sph 202 Introduction to Oral Interpretation** 4 credits
The basic notions of interpreting the written word; practice in reading and memorization of prose, poetry and drama.
- Sph 204 Methods of Debate** 4 credits
Introduction to debate with study and practice of the more important forms.
- Sph 310 Public Speaking** 4 credits
Organization of material; study and practice of oral styles and delivery. Emphasis on the performance of various styles and types by the student. Prerequisite: Sph 100 or permission.
- Sph 320 Speech for the Classroom Teacher** 4 credits
Emphasis on the prospective teacher's own competency as a speaker and the understanding and practice of speech activities useful in teaching; methods of utilizing public speaking, discussion, story telling, oral reading, dramatics and speech correction procedures in the teaching situation.
- Sph 405 Readers Theatre Workshop** 1 credit
Participation in programs and recitals on and off campus; material from literature and drama, both prose and poetry. Maximum, six credits. Prerequisite: Permission of instructor.
- Sph 497 Special Topics** 2-4 credits
Prerequisite: Permission of instructor.

General Science

James J. Cowgill, S.J., Ph.D., *Science Coordinator*
David W. Schroeder, Ph.D., *Engineering Coordinator*

Objective

The objective of the program in general science is to offer the student a liberal education with sufficient background in science to enable the graduate to work in easy liaison with scientists and engineers in industry or government. Judicious use of elective hours permits the student to specialize in other technical areas or in business. A concentration in engineering and one in chemistry or physics is shown below, but other choices are possible according to the need of the student.

Degree Offered

Bachelor of Science in General Science

General Program Requirements

Students in general science must satisfy the core curriculum requirements of the University as given on page 24 of this bulletin and those of the College of Arts and Sciences on page 32. Required are 80 hours of courses in no more than four fields chosen from biology, chemistry, mathematics, physics, psychology and engineering. Courses in engineering are considered as one field in this program. The student must earn at least 24 credits in each of two fields. See sample programs of study below for specific course requirements.

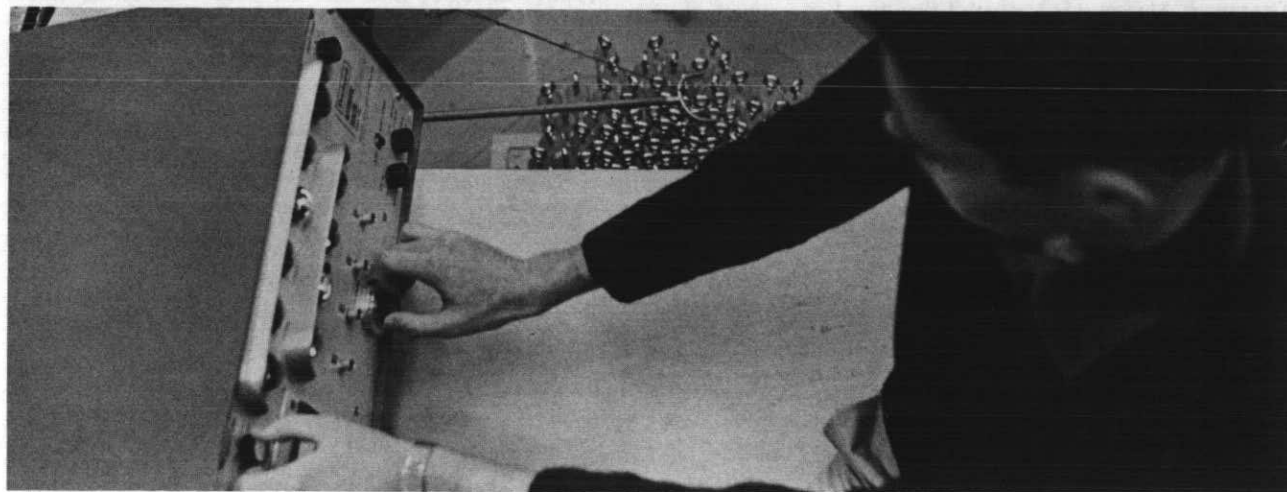
Bachelor of Science in General Science Chemistry or Physics Concentration

Freshman year	
Chemistry 114, 115, 116	12 hours
English 100, 160 and core elective	12 hours
History 102 and core elective	8 hours
Mathematics 111, 131, 132	12 hours
Sophomore year	
Biology 150, 170	8 hours
Mathematics 133, 237	8 hours
Philosophy 125, 150, 175	12 hours
Physics 109, 200	8 hours
Theology 120	4 hours
Electives	8 hours

Junior year	
Chemistry 235, 236, 351	14 hours
Philosophy 225, 250	8 hours
Physics 201, 202	10 hours
Theology 220, 320 and core elective	12 hours
Electives	4 hours
Senior year	
Physics 360, 375, 376	8 hours
Social Science	12 hours
Electives	20 hours
Total	180 hours

Bachelor of Science in General Science Engineering Concentration

Freshman year	
English 100, 160	8 hours
Mathematics 111, 131, 132	12 hours
Mechanical Engineering 100, 110, 112	6 hours
Philosophy 125, 150, 175	12 hours
Physics 200	5 hours
Sophomore year	
Electrical Engineering 251, 253	8 hours
English core elective	4 hours
Mathematics 114, 133, 237	11 hours
Mechanical Engineering 271, 281	8 hours
Physics 201, 202	10 hours
Theology 120	4 hours
Engineering elective	4 hours
Junior year	
Chemistry 314, 315	8 hours
Electrical Engineering 256	2 hours
Philosophy 225, 250	8 hours
Social Science	12 hours
Theology 220, 320 and core elective	12 hours
Engineering elective	4 hours
Senior year	
Engineering electives	8 hours
History 102 and core elective	8 hours
Electives	26 hours
Total	180 hours



Objectives

The objectives of the History department are to provide an essential background to the study of Western Europe, the United States, Latin America and Russia-China-Japan for all students in the University and to deepen and broaden these studies for those majoring in history or those intending further study at the graduate level.

Degrees Offered

Bachelor of Arts
Master of Arts

General Program Requirements

Students in history must satisfy the core curriculum requirements of the University as given on page 24 of this bulletin and those of the College of Arts and Sciences on page 32. Required sequences are 12 hours of social science, 12 hours of science or 8 hours of mathematics and 12 hours of modern language.

Departmental Requirements

BACHELOR OF ARTS—52 hours of history, of which the following courses are required: Hs 101, 102, 103, 200, 400, and 499. Of the remaining 28 hours, 16 are to be taken from courses numbered 304-398 and 8 from courses numbered 405-498. A minimum of 20 hours, selected under direction from both the 300 and 400 series, is to be taken in an area concentration (Western Europe, United States, Latin America or Russia-China-Japan). An oral comprehensive examination covering the candidate's chosen field will be required for graduation. 24 hours of advanced language or a second language are recommended for students contemplating graduate school.

UNDERGRADUATE MINOR—32 hours of history, of which the following courses are required: Hs 101, 102 and 103. Of the remaining 20 hours, 12 are to be taken from courses numbered 305-398, and 4 from courses numbered 405-498.

TEACHING MAJOR (School of Education)—48 hours of history, of which the following courses are required: Hs 101, 102, 103, 231 and 341. Those planning on secondary teaching are to take, under direction of a history faculty member, 12 hours in an area of concentration (Western Europe, United States, Latin America, Russia-China-

Japan) and Hs 300. Those planning on elementary teaching are to take Ed 420 in lieu of Hs 300.

MASTER OF ARTS—45 hours of history, composed as follows: the course in historical methodology, the two courses in historiography and seven field courses. Concerning the field courses: 1) 12 to 15 hours are to be taken in a special area (Western Europe, United States, Latin America); 2) up to 20 hours may be taken from undergraduate courses numbered 405-498. In place of two of the 400 numbered courses, a student may substitute a thesis, but he must register for Hs 599 the quarter in which he completes his work. A reading knowledge of a foreign language is required and an examination will be conducted before completion of one-half of the program. A final comprehensive examination, written and oral, covering all fields taken, but with emphasis on the special area, will be required.

Bachelor of Arts

Freshman year

English 100, 160.....	8 hours
History 101, 102, 103.....	12 hours
Science or mathematics and elective.....	12 hours
Philosophy 125, 150, 175.....	12 hours
Sociology 101.....	4 hours

Sophomore year

Economics 271, 272 or History 334.....	8 hours
English core electives (140, 150 recommended).....	8 hours
History 200.....	4 hours
History 300 series.....	8 hours
Philosophy 225, 250.....	8 hours
Political Science 160 or 353.....	4 hours
Theology 120.....	4 hours
Elective.....	4 hours

Junior year

Fine Arts 101 and 103 or Art 311, 312.....	8 hours
History 300 series.....	8 hours
History 400 series.....	4 hours
Language 101, 102, 103.....	12 hours
Theology 220, 320 and core elective.....	12 hours
Elective.....	4 hours

Senior year

History 400 and 499.....	8 hours
History 400 series.....	4 hours
Language or electives.....	24 hours

Total..... 180 hours

History Courses

- Hs 101 Comparative Civilizations I** 4 credits
Topical studies in the civilizations of Western man from antiquity through the early Middle Ages.
- Hs 102 Comparative Civilizations II** 4 credits
Western man from the High Middle Ages through the Napoleonic world. Prerequisite: Hs 101 for all B.A. candidates.

- Hs 103 Comparative Civilizations III** 4 credits
Western man through the 19th and 20th centuries. Prerequisite: Hs 102.
- Hs 200 Methodology** 4 credits
Techniques of historical research, criticism and writing. Prerequisites: Hs 101, 102, 103.

- Hs 231 Survey of the United States 4 credits**
The events, movements and institutions of American history from the era of discovery and colonization to the present. Prerequisite: Hs 102.
- Hs 251 Survey of Latin America 4 credits**
The events, movements and institutions of Latin American history from the era of discovery and colonization to the present. Prerequisite: Hs 102.
- Hs 281 Survey of the Modern Eastern World 4 credits**
The Arabian, Indian and East Asian world from the Age of Imperialism; conflicts of Western and non-Western traditions. Prerequisite: Hs 102.
- Hs 300 Teaching of History 4 credits**
Techniques of instruction in historical awareness and in basic historical content for the secondary level of education. Limited to history majors and minors in the School of Education. Prerequisites: Hs 102 and core elective.
- Hs 304 Europe of the Early Middle Ages 4 credits**
The Mohammedan, Byzantine and Christian cultures from the end of the Roman Empire through the first millenium. Prerequisite: Hs 101.
- Hs 305 Europe of the 11th and 12th Centuries 4 credits**
The development of Western Europe from the end of Magyar, Moslem and Scandinavian invasions through the renaissance of the 12th century. Prerequisite: Hs 101.
- Hs 306 Europe of the High Middle Ages 4 credits**
An analysis of the cultural, social and political institutions of the 13th century. Prerequisites: Hs 101, 102.
- Hs 307 Europe of the Renaissance 4 credits**
Movements and institutions from Italy to the rest of Europe; from the 14th through the early 16th centuries. Prerequisites: Hs 101, 102.
- Hs 309 Europe of the 16th Century 4 credits**
The Protestant and Catholic Reformation. Prerequisites: Hs 101, 102.
- Hs 310 Europe of the 17th Century 4 credits**
The Scientific Revolution, baroque synthesis and European state system to Utrecht. Prerequisites: Hs 101, 102.
- Hs 311 Europe of the 18th Century 4 credits**
The cultural and political ferment of Western civilization in the century from Utrecht to Waterloo. Prerequisites: Hs 101, 102.
- Hs 313 Europe of the 19th Century 4 credits**
The era of revolutions, in ideas and society, from the Napoleonic wars to the beginning of World War I. Prerequisites: Hs 101, 102, 103.
- Hs 315 Europe of the 20th Century 4 credits**
The contemporary movements and institutions in the home base of Western civilization, through war and peace. Prerequisites: Hs 101, 102, 103.
- Hs 321 Modern France 4 credits**
The development of cultural and political France from Francis I to the present. Prerequisites: Hs 101, 102, 103.
- Hs 323 Modern Spain 4 credits**
The development of cultural and political Spain from Isabella to the present. Prerequisites: Hs 101, 102, 103.
- Hs 324 Church History I 4 credits**
(Th 391) Topics in early Church history from the birth of Christ through the fall of the Roman Empire. Prerequisite: Hs 101.
- Hs 325 Church History II 4 credits**
(Th 392) Topics in Church history from the early Middle Ages through the decline of the medieval synthesis. Prerequisites: Hs 101, 102.
- Hs 326 Church History III 4 credits**
(Th 393) Topics in Church history from the Protestant Reformation through Vatican II. Prerequisites: Hs 102, 103.
- Hs 331 Colonial North America 4 credits**
The European discoveries, explorations and settlements from the 16th through the late 18th centuries. Prerequisite: Hs 102.
- Hs 333 The Beginnings of the United States 4 credits**
The Revolution and the Constitution, the first continental expansion and the first world contacts to the era of Monroe. Prerequisites: Hs 102 and 103 or 231.
- Hs 334 American Economic History 4 credits**
Topical survey in American economic development from colonial times to the present. Prerequisites: Hs 102 and 103 or 231 or graduate standing.
- Hs 335 The Expansion and Crisis of the Union 4 credits**
The United States from the era of Jackson through the Civil War and Reconstruction. Prerequisites: Hs 102 and 103 or 231.
- Hs 337 The United States: Expansion and World Power 4 credits**
The domestic and foreign development of American power from the end of Reconstruction to the Great Depression. Prerequisite: Hs 103.
- Hs 339 Recent United States 4 credits**
The development of American culture from the stock market crash of 1929 to the present with emphasis on political, social, diplomatic and economic affairs. Prerequisites: Hs 102 and 103 or 231.
- Hs 341 The Pacific Northwest 4 credits**
The past development and present problems of the states comprising the old Oregon Country, with emphasis on Washington State. Prerequisites: Hs 102 and 103 or 231.
- Hs 351 Mexico 4 credits**
The formation and development of the Mexican nation from pre-Columbian and Spanish origins to the present. Prerequisites: Hs 102 and 103 or 251.
- Hs 353 Brazil 4 credits**
The development, under Portuguese and other influences, of the Brazilian nationality and culture to the present. Prerequisites: Hs 102 and 103 or 251.
- Hs 355 Argentina and Chile 4 credits**
The history and culture of the southern South American republics from the first European settlements to the present. Prerequisites: Hs 102 and 103 or 251.
- Hs 357 Central America and the Caribbean 4 credits**
The strategic center of the Americas from the Columbian beginnings to the present cluster of colonies and republics. Prerequisites: Hs 102 and 103 or 251.
- Hs 359 The Andean Republics 4 credits**
The history and culture of Peru, Bolivia, Equador and Colombia from the Spanish Conquest to the present. Prerequisites: Hs 102 and 103 or 251.

- Hs 363 England of the 16th and 17th centuries** 4 credits
The critical course of English destinies under the Tudors and the Stuarts and its effects in subsequent world history. Prerequisite: Hs 102.
- Hs 365 Modern Britain** 4 credits
The history of the great island kingdom, from the 18th through the 20th centuries. Prerequisites: Hs 102, 103.
- Hs 372 Early Russia** 4 credits
The origins and development of Russia from the Kievan period through the era of Peter the Great. Prerequisites: Hs 101, 102, 103.
- Hs 373 Modern Russia** 4 credits
The history and culture of the Russian people in the 19th and 20th centuries. Prerequisites: Hs 102, 103.
- Hs 381 China, to the 10th Century** 4 credits
The foundations and fortunes of the Chinese nation and culture from the earliest times to the end of the T'ang Dynasty. Prerequisite: Hs 101.
- Hs 382 China, from the 10th through the 19th Centuries** 4 credits
The thousand years of Chinese empire and civilization from the end of the T'ang to the end of the Ch'ing dynasties. Prerequisites: Hs 102 and 103 or 281.
- Hs 383 China of the 20th Century** 4 credits
The successive revolutions of the Chinese republics and the contemporary situation of the Chinese people and culture. Prerequisites: Hs 102 and 103 or 281.
- Hs 386 Traditional Japan** 4 credits
Japanese history and culture, from earliest times to the Meiji restoration. Prerequisites: Hs 102 and 103 or 281.
- Hs 387 Modern Japan** 4 credits
Japanese history and culture, with emphasis on the last hundred years of western contact and world power. Prerequisites: Hs 102 and 103 or 281.
- Hs 396 Special Topics** 4 credits
Hs 397 Special Topics 4 credits
Hs 398 Special Topics 1-5 credits
Private work by arrangement with approval of department chairman.
- Hs 400 Historiography** 4 credits
The history of historical study and writing, and the philosophy of history from the earliest times to the present. Limited to history majors in the College of Arts and Sciences. With permission of instructor. Prerequisite: Hs 200.
- Hs 405 Some Aspects of Medievalia** 4 credits
Studies in medieval history and culture. Prerequisite: Hs 304 or 305 or 306.
- Hs 408 Expansion of Europe** 4 credits
Studies in the impingement of Europe on the new and old worlds from the 15th through the 18th centuries. Prerequisite: Hs 309.
- Hs 411 France: Ancien Regime** 4 credits
Studies in the institutions and events of the century preludeing the fall of old France. Prerequisite: Hs 311.
- Hs 412 The French Revolution and Napoleon** 4 credits
Studies in revolutionary thought and action. Prerequisite: Hs 311.
- Hs 414 Modern Germany** 4 credits
Studies in German history and culture from Stein to Adenauer. Prerequisite: Hs 313 or 315.
- Hs 432 American Diplomacy I** 4 credits
Diplomatic history of the United States from Independence through the 19th century. Prerequisite: Hs 231 or 333 or 337.
- Hs 433 American Diplomacy II** 4 credits
Diplomatic history of the United States during the 20th century. Prerequisite: Hs 231 or 337 or 339.
- Hs 434 American Revolution and Confederation** 4 credits
Studies of events and interpretations in the history of the Atlantic seaboard provinces from the end of the Great War for Empire through independence and the Confederated United States. Prerequisite: Hs 331.
- Hs 435 American Reconstruction** 4 credits
Studies in the political, social and economic aspects in the post-Civil War Reconstruction of the United States. Prerequisite: Hs 335.
- Hs 437 The Progressive Movement** 4 credits
Studies in an American political and social phenomenon. Prerequisite: Hs 337.
- Hs 451 Pre-Columbian America** 4 credits
Studies in the Mayan, Aztec, Incan, and other civilizations in subsequent Latin America. Prerequisite: Hs 351, 353, 355, 357 or 359.
- Hs 453 Colonial Institutions in Latin America** 4 credits
Studies in various aspects, political, social, economic and religious. Prerequisite: Hs 351, 353, 355, 357 or 359.
- Hs 464 Puritans and Parliament-Men** 4 credits
Studies in the crises of the 17th-century English Church and State. Prerequisite: Hs 363.
- Hs 479 Marxist Thought** 4 credits
The historical, political and social theory of Marxism from the origins to the present, in Europe, Asia and the Americas. Prerequisite: Hs 313 or 315 or 373 or 381.
- Hs 480 Chinese Traditional Thought** 4 credits
Studies in Chinese philosophy, religious thought, political doctrine and historiography. Prerequisite: Hs 381 or 382.
- Hs 496 Special Topics** 4 credits
Hs 497 Special Topics 4 credits
Hs 498 Special Topics 1-5 credits
Private studies by arrangement with approval of department chairman. Prerequisite: Completion of 300 series courses in related areas.
- Hs 499 Senior Seminar** 4 credits
Specially directed projects in research and composition. Limited to seniors in Arts and Sciences. Prerequisites: Hs 200 and at least one course in the 400 series.

Graduate Courses

- Hs 500 Historical Methodology** 5 credits
- Hs 501 Historiography I: from Antiquity to the Enlightenment** 5 credits
An analysis of the theses and techniques of the major historians from Herodotus to Gibbon.

Hs 502	Historiography II: from the Enlightenment to the Present From Gibbon to the present.	5 credits	Hs 534	United States: 20th Century Domestic The contemporary nation from Wilson through Johnson.	5 credits
Hs 505	Medieval History Studies in Medieval history and culture.	5 credits	Hs 535	United States: World Relations Topics in the nation's diplomatic history.	5 credits
Hs 507	Renaissance and Reformation Studies in the cultural and religious history of Europe from the 14th through the 17th centuries.	5 credits	Hs 536	United States: Frontier America Studies in the nation's diplomatic history.	5 credits
Hs 512	Early Modern Europe From the Renaissance through the Enlightenment.	5 credits	Hs 551	Latin America: Colonial The Spanish and Portuguese colonies to the Revolution.	5 credits
Hs 513	Revolutionary Europe Studies in continental revolutions at the end of the 18th and during the first half of the 19th centuries.	5 credits	Hs 552	Latin America: National The 19th and 20th centuries.	5 credits
Hs 531	United States: Colonial The British colonies in North America through the War for Independence.	5 credits	Hs 553	Mexico Topics in Mexican history from the Spanish explorations to the present.	5 credits
Hs 532	United States: National The new nation to the end of the Civil War.	5 credits	Hs 554	Brazil Topics in Brazilian history from the Portuguese explorers to the present.	5 credits
Hs 533	United States: Reconstruction, Populism and Progressivism The expanding nation to World War I.	5 credits	Hs 598	Special Topics	1-5 credits
			Hs 599	Thesis	5 credits

Objectives

The Home Economics department provides studies in the arts and sciences with a concentration in home economics. The student wishing to enter the field may select from three curricula: teaching, professional or general. The purpose of each curriculum determines the degree of specialization and the supporting sciences and arts required. The student who plans to become active professionally after graduation should choose either the teaching or the professional program.

The teaching curriculum prepares the student to become a home economist in education and to teach at the junior and senior high school levels. The student must satisfy the requirements for a degree in home economics and for provisional certification by the State of Washington as outlined by this curriculum. Following the first year of teaching, continued academic studies are required to meet the standard state certification.

The professional curriculum gives basic education and specialization required of the professional home economist in areas of business, industry or communications. The option of minor concentration further directs the professional emphasis. Graduate study leading to advanced degrees is necessary for research, greater specialization in college level teaching and wider professional opportunities.

The general curriculum is designed to educate broadly within the arts and sciences, providing a general background in home economics. This course of study may be chosen by the student wishing a liberal education but not planning to enter professional life.

Home Economics

Eunice M. Martin, M.A., *Chairman*

Degree Offered

Bachelor of Science in Home Economics

General Program Requirements

Students in home economics must satisfy the core curriculum requirements of the University as specified on page 24 of this bulletin. For core sequences required in each program, see curriculum outlines which follow.

Departmental Requirements

BACHELOR OF SCIENCE—(Professional Curriculum)—56 hours in home economics which must include HE 110, 111, 160, 161, 220, 250, 260, 270, 280, 285, 310, 315, 360, and 497. The related minor of 24 hours may be selected from art, journalism or marketing as specified by the department. Modification of the major for special emphasis, proper chemistry sequences, additional science and mathematics requirements for research, and special graduate study must be approved by the department chairman.

BACHELOR OF SCIENCE—(Teaching Curriculum)—58 hours in home economics which must include HE 110, 111, 160, 161, 220, 250, 260, 270, 280, 285, 310, 315, 340, 360 and 490.

BACHELOR OF SCIENCE—(General Curriculum)—40 hours in home economics which must include HE 110, 111, 160, 161, 220, 250, 260, 270, 280, 285 and one 4-hour elective.

UNDERGRADUATE MINOR—24 hours selected with the direction of an adviser.

Bachelor of Science in Home Economics Professional Curriculum

Freshman year	
Art 221 and 231	4 hours
Chemistry 101, 102	8 hours
Economics 271	4 hours
English 100, 160, 180 or 190	12 hours
Home Economics 110 or 160, 111 or 161, 260 or minor	12 hours
Psychology 100	4 hours
Sociology 101	4 hours
Sophomore year	
Biology 270, 271	8 hours
Home Economics 110 or 160, 111 or 161, 220, 260 or minor, 270	20 hours
Minor or elective	4 hours
Philosophy 125, 150, 175	12 hours
Theology 120	4 hours
Junior year	
Biology 300	4 hours
Home Economics 250, 280, 285, 310	16 hours
Minor or elective	8 hours
Philosophy 225, 250	8 hours
Theology 220, 320 and core elective	12 hours
Senior year	
History 102 and core elective	8 hours
Home Economics 315, 360, 497	12 hours
Minor or elective	12 hours
Sociology 260	4 hours
Total	
180 hours	

Bachelor of Science in Home Economics Teaching Curriculum

Freshman year	
Art 221 and 231	4 hours
Chemistry 101, 102	8 hours
Economics 271	4 hours
English 100, 160, 180 or 190	12 hours
Home Economics 110 or 160, 111 or 161, 260 or 285	12 hours
Psychology 100	4 hours
Sociology 101	4 hours
Sophomore year	
Biology 270, 271	8 hours
Education 200, 322	6 hours
Home Economics 110 or 160, 111 or 161, 220, 270	16 hours
Philosophy 125, 150, 175	12 hours
Physical Education	2 hours
Theology 120	4 hours

- HE 110 Principles of Food Preparation** 4 credits
Basic theories of food selection, preparation and storage; equipment appraisal and use; time utilization. Three lab hours per week.
- HE 111 Meal Management** 4 credits
Principles of management related to the planning, preparation and service of meals with emphasis on efficient utilization of time, money, food value and equipment. Three lab hours per week. Prerequisite: HE 110.

Junior year

Biology 300	4 hours
Education 325	3 hours
Home Economics 250, 280, 285 or 260, 310, 340	20 hours
Philosophy 225, 250	8 hours
Theology 220, 320 and core elective	12 hours

Summer

History 102 and core elective	8 hours
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Senior year

Education 330, 331, 332, 441, 445	25 hours
Home Economics 315, 360, 430, 431, 490	14 hours
Sociology 260, 262	8 hours
Total	
198 hours	

Bachelor of Science in Home Economics General Curriculum

Freshman year

Art 221, 231	4 hours
Chemistry 101, 102	8 hours
Economics 271	4 hours
English 100, 160, 180 or 190	12 hours
Home Economics 110 or 160, 111 or 161, 260 or elective	12 hours
Psychology 100	4 hours
Sociology 101	4 hours

Sophomore year

Biology 270, 271	8 hours
Home Economics 110 or 160, 111 or 161, 220, 260 or elective, 270	20 hours
Philosophy 125, 150, 175	12 hours
Speech 100	4 hours
Theology 120	4 hours

Junior year

History 102 and core elective	8 hours
Home Economics 250, 280, 285	12 hours
Philosophy 225, 250	8 hours
Theology 220, 320 and core elective	12 hours
Electives	8 hours

Senior year

Language 101, 102, 103	12 hours
Political Science 160	4 hours
Sociology 260	4 hours
Social Science	8 hours
Electives	8 hours

Total 180 hours

Home Economics Courses

- HE 160 Clothing Selection and Construction** 4 credits
Design essentials, socio-psychological aspects of clothing; principles of pattern alteration; fitting and construction; project in cotton or linen. Three lab hours per week.
- HE 161 Clothing Design by Flat Pattern** 4 credits
Principles of flat pattern designing and construction in wool; economics and marketing concepts related to clothing. Three lab hours per week. Prerequisite: HE 160.

- HE 220 Nutrition** 4 credits
Relation of nutrients to health; consideration of individual requirements and utilization of nutrients; composition of foods; dietary planning in normal nutrition. Prerequisites: Ch 102 and Bl. 271.
- HE 250 Personal and Family Finance** 4 credits
The use of resources to further individual and family objectives; current accounts; long term financial planning; consumer problems.
- HE 260 Clothing Design by Draping** 4 credits
Principles of designing by draping and construction in fabric of selected filament fibers. Three lab hours per week. Prerequisite: HE 161.
- HE 270 Introductory Textiles** 4 credits
Study of properties of selected fibers, yarns, fabrics and finishes; historical and marketing aspects; physical and chemical testing. Three lab hours per week.
- HE 280 Choosing the Home** 4 credits
Analysis of design, materials, functions and cost of the home based on personal and family values and requirements.
- HE 285 Furnishing the Home** 4 credits
The relation of interior design and furnishings to the values, resources, and requirements of the family and the individual; fundamentals of selection, arrangement, management, lighting, color.
- HE 310 Experimental Foods** 4 credits
Chemical and physical concepts of food preparation through experimentation. Three lab hours per week. Prerequisites: HE 111 and Ch 102.
- HE 315 Demonstration** 4 credits
Student presentations of food and equipment using the lecture-demonstration method; analysis of specialized writing in home economics. Six lab hours per week. Prerequisite: HE 111.
- HE 320 Advanced Nutrition** 4 credits
The chemistry of foods and nutrients with em-

phasis on the relation of nutrition to the functioning of the body systems. Prerequisite: HE 220.

- HE 340 Management and Family Living** 4 credits
Principles of management related to human and material resources during the family life cycle. Special study problems. Prerequisite: HE 250 or approval of instructor.
- HE 360 Tailoring** 4 credits
Fundamentals of custom tailoring for women; comparative tailoring and dressmaking; suit or coat construction. Three lab hours per week. Prerequisite: HE 260.
- HE 370 Comparative Textiles** 4 credits
Selected cellulosic, protein, regenerated and synthetic fibers; qualitative and quantitative analyses of blended sources. Two laboratory hours per week. HE 270 and Ch 102.
- HE 376 Textile Analysis** 4 credits
Physical methods of investigating textiles. Micro-technique. Six lab hours per week. Prerequisite: HE 270 and Ch 102.
- HE 430 Home Economics Methods** 2 credits
- HE 431 Home Economics Methods** 2 credits
Organization of subject matter and teaching materials. Methods of teaching specific home economics areas. Majors in teaching curriculum must register for HE 430 and 431 concurrently. Prerequisites: Ed 330 and permission of Home Economics Department.
- HE 490 Special Study** 2 credits
Directed study or experience in specific areas of Home Economics. Prerequisite: Approval of department chairman.
- HE 497 Individual Research** 4 credits
Supervised research problems; laboratory investigation; study of literature; written thesis. Open to senior home economics majors with the approval of the department chairman.

Honors Program

James J. Tallarico M.A., Director

evidence that they are willing to make the effort necessary to achieve genuine superiority in the intellectual pursuits. High among qualities sought is the ability to commit one's self to an idea and its challenge.

Program Requirements

Students register for and complete each of the course sequences numbered Hu 101 through Hu 223. In addition they must complete the mathematics, science, or social science core sequences in regular university classes, as given on page 24 of this bulletin. Honors students, on completion of their two-year program, transfer into one of the departments of the University to fulfill the requirements for their major. It is possible to fulfill these requirements in some departments, chiefly in the humanities, in one year by completing some work in summer session.

Objectives

The Honors Program is designed to produce the student who can think, read, write and speak integratively across many departmental lines presently dividing various university disciplines. For that reason it is historically conceived, beginning with the Hindus, proceeding through the Hebrews, Greeks, Romans and Medieval Europeans to modern areas of concern. The various disciplines, i.e., thought, literature and history, are correlated so as to provide the student with the greatest possible depth in the period under examination. It is so worked out that it provides a more than adequate background for most majors available in the University.

Scholarships

Scholarships are granted on a one-year basis, renewable on proof of competence. They include full tuition. Applicants are chosen not only on previous record, but on

Completion of the Honors Program satisfies core requirements in philosophy, English, history and theology except Th 420 (or its equivalent). Additional credit is automatically granted for Pl 400. En 220, Pl 440 and Th 420 (or equivalent) may be completed in summer study or by special examination prior to entering the major field.

Termination of the Honors Program at any point prior to the completion of its specified six quarters will call for an evaluation of the student's credits, especially in terms of the core curriculum, according to a schema previously determined by the Dean of the College of Arts and Sciences.

Honors Courses

- Hu 101 Humanities Seminar—Thought 6 credits**
Hu 102 Humanities Seminar—Thought 6 credits
Hu 103 Humanities Seminar—Thought 6 credits

Three quarters of critical reading and discussion of the works which have most deeply influenced the development of the Western world, including the Upanishads, Old Testament, Pre-Socratics, Plato, Aristotle, Seneca, Epictetus, New Testament, St. Augustine, Boethius, St. Thomas.

- Hu 111 Humanities Seminar—Literature 4 credits**
Hu 112 Humanities Seminar—Literature 4 credits
Hu 113 Humanities Seminar—Literature 4 credits

A critical examination of those literary works which have most deeply influenced the development of the Western world, including the Bhagavad-Gita, dramatic books of the Old Testament, Homer and the Greek playwrights, Lucretius, Virgil, St. Paul, St. Augustine and Dante.

The General Honors Program is a one-year non-scholarship program open to students whose major field cannot accommodate the full two-year program but who wish to participate in the honors experience. It is designed to integrate the various fields of the humanities and general science, approach man's development historically, and develop in students the ability to write, listen and speak critically and constructively. The curriculum includes major works of philosophy, literature, theology and science drawn from Hindu, Greek, Biblical, Roman, early Christian, Renaissance, modern and contemporary periods. The program is conducted according to the dialogue method, and on occasion an outside lecturer is invited to lead the discussion. Students meet in two-hour seminars three days each week. Twice each quarter each student must read a paper, and defend or correct it in the light of criticism provided by other members of the seminar. There is a written and oral examination at the end of each quarter.

The program is open to first-, second-, third-, or fourth-year students of normal intellectual ability. The prime requisite is a profound desire to learn and a great willingness to work. Applications are made through the Honors office well before Fall quarter begins. Completion of the program by freshmen satisfies 24 hours of core curriculum requirements. Those beyond fresh-

- Hu 121 Humanities Seminar—History 4 credits**
Hu 122 Humanities Seminar—History 4 credits
Hu 123 Humanities Seminar—History 4 credits

An historical survey designed to furnish background discipline for humanities—thought and humanities—literature. Hence this survey will accompany, step by step, the other disciplines.

- Hu 201 Humanities Seminar—Thought 6 credits**
Hu 202 Humanities Seminar—Thought 6 credits
Hu 203 Humanities Seminar—Thought 6 credits

Three quarters of critical reading and discussion, including Galileo, Descartes, Bacon, Hobbes, Luther, Calvin, the Council of Trent, Locke, Spinoza, Leibnitz, Rousseau, Hume, Kant, Hegel, J. S. Mill, Newman, Freud, Marx, Whitehead, Existentialists.

- Hu 211 Humanities Seminar—Literature 4 credits**
Hu 212 Humanities Seminar—Literature 4 credits
Hu 213 Humanities Seminar—Literature 4 credits

The Cid, Song of Roland, Beowulf, Chaucer, Shakespeare, Donne, Racine, Moliere, Corneille, Milton, Dryden, Pope, Goethe, the Romantics, Victorians, Russian novelists and modern plays through the Existentialists.

- Hu 221 Humanities Seminar—History 4 credits**
Hu 222 Humanities Seminar—History 4 credits
Hu 223 Humanities Seminar—History 4 credits

The Renaissance to the present.

General Honors Program

James J. Tallarico, M.A., Director

man level can satisfy 12 hours of core requirements with approval of the Dean.

General Honors Courses

- Hu 290 General Honors Seminar I 8 credits**
Hu 291 General Honors Seminar II 8 credits
Hu 292 General Honors Seminar III 8 credits

I Readings in Hindu, Hebrew, Greek and Roman thought and literature, with emphasis on problem-solving.

II Readings in early Christian writers, Boethius, St. Augustine, early medieval and St. Thomas.

III Readings in modern thought and literature, from Galileo through Whitehead and the leading Existentialists.

For first and second year students

- Hu 490 General Honors Seminar I 8 credits**
Hu 491 General Honors Seminar II 8 credits
Hu 492 General Honors Seminar III 8 credits

I Readings in Hindu, Hebrew, Greek and Roman thought and literature, with emphasis on problem-solving.

II Readings in early Christian writers, Boethius, St. Augustine, early medieval and St. Thomas.

III Readings in modern thought and literature, from Galileo through Whitehead and the leading Existentialists.

For third and fourth year students

Journalism

John R. Talevich, M.A., *Chairman*

Objectives

The journalism program implements the University's basic liberal studies curriculum with the theoretical and practical background required for effective and responsible performance in mass communications in a dynamic society. The journalism department seeks to produce graduates who are qualified to begin professional careers or to undertake advanced study in specialized communication areas.

Degree Offered

Bachelor of Arts

General Program Requirements

Students in journalism must satisfy the core curriculum requirements of the University as given on page 24 of this bulletin and those of the College of Arts and Sciences on page 32. Required sequences are 12 hours of social science, 12 hours of science or 8 hours of mathematics and 12 hours of either a modern language or fine arts. To enroll in any journalism course, a student must have sophomore standing.

Departmental Requirements

BACHELOR OF ARTS—40 hours of journalism which must include Jr 200, 210, 220, 250 and 24 hours of courses numbered 300 or above; 8 hours of English numbered 300 or above; and 12 hours of upper division American history courses. A minor related to the student's area of specialization may be chosen in art, history, language, drama or speech. Specified courses in business will be re-

quired of students planning careers in public relations or advertising.

UNDERGRADUATE MINOR—24 hours which must include Jr 200, 210, 220, 250 and 8 hours of courses numbered 300 or above.

Bachelor of Arts

Freshman year

English 100, 160 and core elective 12 hours
History 101, 102 and core elective 12 hours
Philosophy 125, 150, 175 12 hours
Social Science 12 hours

Sophomore year

English core elective 4 hours
Journalism 200, 210, 250 12 hours
Language or Fine Arts 12 hours
Minor or electives 8 hours
Philosophy 225, 250 8 hours
Theology 120 4 hours

Junior year

English (upper division) 4 hours
Journalism 220 and electives 12 hours
Minor or electives 8 hours
Science or mathematics and elective 12 hours
Theology 220, 320 and core elective 12 hours

Senior year

English (upper division) 4 hours
History 331, 333, 335, 337 or 339 12 hours
Journalism electives 16 hours
Minor or elective 4 hours

Total 180 hours

Journalism Courses

- Jr 200 Principles of Communication** 4 credits
A study of the nature of media of mass communication; interrelationship of the press and society; content analysis of news publications.
- Jr 210 Newswriting** 4 credits
A study of the elements of the news story; practice in gathering data for and writing news for mass communications media.
- Jr 220 History of Journalism** 4 credits
A study of the origins and growth of the American press from colonial to modern times.
- Jr 250 Copyreading** 4 credits
Principles and practice in copyediting, headlines and layout.
- Jr 310 Reporting Public Affairs** 4 credits
Study of and practice in gathering and writing complex news stories based upon activities of government, judicial and community agencies. Prerequisite: Jr 210.
- Jr 320 Photojournalism I** 2 credits
Jr 321 Photojournalism II 2 credits
Elementary principles of newsphotography, processing and picture editing. Photography for student publications. Prerequisite: permission of adviser.

- Jr 345 Law of the Press** 3 credits
Constitutional guarantees and restrictions on freedom of information, with a study of significant cases; statutes governing libel, copyright, privacy and postal regulations.
- Jr 350 Feature Writing** 4 credits
Elements of non-fiction articles for newspaper and magazine publications; actual writing for sale.
- Jr 355 Communications Graphics** 4 credits
Study of basic printing procedures; writing and editing techniques for organization publications; planning and purchasing printing. Prerequisites: Jr 210, 250.
- Jr 370 Editorial Writing** 4 credits
Work and responsibility of editorial writers today with emphasis on editorial writing and thinking; analysis of published editorials.
- Jr 430 Critical Writing** 4 credits
A reading and discussion with practice writing of newspaper-style reviews of books, motion pictures, radio, television and theatrical entertainments.
- Jr 440 Literature of Journalism** 2 credits
Reading and reports on the outstanding books related to journalism.

- Jr 460 Public Relations** 4 credits
Public relations as a management function; problems, policies and procedures; program analysis and case study.
- Jr 465 School Publications** 4 credits
For teachers wishing preparation for advising school newspapers or annuals; theory and practical problems.
- Jr 470 Publications' Workshop I** 1 credit
Jr 471 Publications' Workshop II 1 credit
Jr 472 Publications' Workshop III 1 credit
(I) Analysis of individual student publications; practice in writing for and editing college publi-

cations. (II) Advanced work in college publications. (III) Actual work as a major department head of a college publication.

- Jr 491 Journalism Ethics** 3 credits
Seminar in solutions for practical ethical problems facing journalists today.
- Jr 495 Special Topics** 1-5 credits
Jr 496 Special Topics 1-5 credits
Jr 497 Special Topics 1-5 credits
Supervised research work. Open only to journalism majors. Prerequisites: Advanced standing in journalism and permission of instructor.

Objectives

The specific purpose of the foreign language program in French, German, Spanish, Latin and Greek is both linguistic and cultural.

MAJOR PROGRAM—At the first level it seeks to equip the student with an adequate reading, writing and (in the case of modern languages) speaking facility at the level of ordinary discourse so that he may use these skills for communication with native speakers, and at the same time as tools for academic research or instruction in his chosen field, as, for example, history, political science, foreign service, seminary studies, professional theology, elementary or secondary teaching. Since it is a program of a certain depth, it may also serve as a minor in many fields.

At the second level its purpose is to unlock the culture of the linguistic community by means of the foreign language used as the key. Thus, it embraces not only the works and movements of each literary epoch but also their relationship to the other arts, to political and social history, and to physical, economic and human geography. This is the goal of the major.

READING PROGRAM—For students whose program demands the use of a foreign language only as a tool for reading, a sequence of three reading courses (101, 102, 103) is offered each year. Its primary purpose is to prepare the student to handle with understanding the written text of a foreign language, modern or classical, for scholarly purposes. It prescind completely from phonology to concentrate totally on the morphological and syntactical patterns of the language, together with its lexicon, to instill the reading skill. As a consequence, its secondary goal is to produce in the student the facility necessary to pass the customary foreign language reading examinations usually required in graduate schools.

Degree Offered

Bachelor of Arts

General Program Requirements

Students in language must satisfy the core curriculum requirements of the University as specified on page 24

of this bulletin and those of the College of Arts and Sciences on page 32. Required sequences are 12 hours of social science and 12 hours of science. Modern language majors are expected to complete a minor in a second modern language. Classical language majors must complete a minor in a second classical language.

Departmental Requirements

BACHELOR OF ARTS (modern languages)—60 hours which must include 110, 210, 220, 301, 302, 303, 306, 308, 410, 425, 430 and 490.

BACHELOR OF ARTS (classical languages)—48 hours which must include 101, 102, 103, 204, 205, 206, 307, 308, 309, 413, 414 and 415.

UNDERGRADUATE MINOR (modern languages)—32 hours which must include 110, 210, 220, 301 and 302.

UNDERGRADUATE MINOR (classical languages)—36 hours which must include 101, 102, 103, 204, 205, 206, 307, 308 and 309.

The languages department reserves the right to waive all or part of these requirements for students who have demonstrated equivalent achievement at the college level. Such achievement will be determined by a series of written and oral examinations. No credit is given for courses waived, but the student passing these examinations may substitute electives for the courses waived. Credit by examination in language courses may be provided if the student meets the University's requirements as specified on page 27 of this bulletin.

Through the cooperation of the School of Education a program has been arranged to equip the student for a career as a foreign language teacher. Furthermore, in collaboration with other departments that have bilingual instructors, courses in the related humanities are occasionally offered with a foreign language as the medium of instruction. It thus becomes possible for the student to complete a larger portion of his general course work in the language of his choice.

No student may satisfy language requirements by examinations in his native language, since the goal of this program is mastery of a language foreign to the student.

Languages

Robert B. Saenz, S.J., Ph.L., S.T.L., *Acting Chairman*

**Bachelor of Arts
Modern Languages**

Freshman year	
English 100, 160, 170	12 hours
Modern Language 110, 210, 220	24 hours
Philosophy 125, 150, 175	12 hours
Sophomore year	
History 101, 102 and core elective	12 hours
Modern Language 301, 302, 303	12 hours
Philosophy 225, 250	8 hours
Sociology 101, 102, 200	12 hours
Theology 120	4 hours
Junior year	
Modern Language 306, 308, 410	12 hours
Modern Language (minor) 110, 210, 220	24 hours
Theology 220, 320 and core elective	12 hours
Senior year	
English 140	4 hours
Modern Language 420, 430, 490	12 hours
Modern Language (minor) 301, 302	8 hours
Science core, Ch 100, BI 101, 102	12 hours
Total	180 hours

French Courses

Fr 101	Reading French I	4 credits
Fr 102	Reading French II	4 credits
Fr 103	Reading French III	4 credits
	An intensive study of the morphological and syntactical patterns of written French, together with its lexicon, to equip the student with the skills necessary to read and translate the standard written text. For non-majors and non-minors only.	
Fr 110	Langue française I	8 credits
Fr 210	Langue française II	8 credits
Fr 220	Langue française III	8 credits
Fr 301	Geographie de la France	4 credits
Fr 302	Histoire de France	4 credits
Fr 303	Initiation à la littérature française	4 credits
	Theorie et technique de l'analyse littéraire, explication de textes choisis, versification, figures de style, bibliographie.	
Fr 306	XIXe Siècle	4 credits
	Panorama littéraire—poésie.	
Fr 308	XVIIe Siècle	4 credits
	Panorama littéraire—théâtre classique.	
Fr 410	XVIe Siècle	4 credits
	Aspects de la littérature de la Renaissance.	
Fr 425	XVIIIe Siècle	4 credits
	L'esprit philosophique: Montesquieu, Voltaire, Diderot, Rousseau.	
Fr 430	XXe Siècle	4 credits
	Aspects de la littérature contemporaine.	
Fr 450	Methodologie de l'enseignement du Français	4 credits
Fr 451	La civilisation française	4 credits
Fr 452	Perfectionnement de la langue	4 credits
	Ces trois cours constituent un "Cours d'Été" réservé au professeurs de lycées américains qui leur permet de perfectionner leur connaissance de la langue et de la civilisation, et d'en apprendre les principes pédagogiques.	

**Bachelor of Arts
Classical Languages**

Freshman year	
Classical Language 101, 102, 103	12 hours
Classical Language (minor) 101, 102, 103	12 hours
English 100, 160, 170	12 hours
Philosophy 125, 150, 175	12 hours
Sophomore year	
Classical Language 204, 205, 206	12 hours
Classical Language (minor) 204, 205, 206	12 hours
History 101, 102 and core elective	12 hours
Philosophy 225, 250	8 hours
Theology 120	4 hours
Junior year	
Classical Language 307, 308, 309	12 hours
Classical Language (minor) 307, 308, 309	12 hours
Sociology 101, 102, 200	12 hours
Theology 220, 320 and core elective	12 hours
Senior year	
Classical Language 413, 414, 415	12 hours
English 150	4 hours
Science core, Ch 100, BI 101, 102	12 hours
Electives	8 hours
Total	180 hours

Modern Languages Courses

Fr 490	Etudes littéraires	2-8 credits
	Analyse intensive d'auteurs, d'oeuvres ou de problèmes spécifiques.	
German Courses		
Gr 101	Reading German I	4 credits
Gr 102	Reading German II	4 credits
Gr 103	Reading German III	4 credits
	An intensive study of the morphological and syntactical patterns of written German, together with its lexicon, to equip the student with the skills necessary to read and translate the standard text. For non-majors and non-minors only.	
Gr 110	Deutsche Sprache I	8 credits
Gr 210	Deutsche Sprache II	8 credits
Gr 220	Deutsche Sprache III	8 credits
Gr 301	Deutsche Literatur und Landeskunde I	4 credits
Gr 302	Deutsche Literatur und Landeskunde II	4 credits
Gr 303	Deutsche Literatur und Geschichte	4 credits
Gr 306	Lessing und Schiller	4 credits
Gr 308	Goethe	4 credits
Gr 410	Novellendichtung des 19. Jahrhunderts	4 credits
Gr 425	Deutsche Literatur des 19. Jahrhunderts	4 credits
Gr 430	Deutsche Literatur des 20. Jahrhunderts	4 credits
Gr 490	Deutsche Literatur bis zur Aufklärung	2-8 credits

Spanish Courses

Sp 101	Reading Spanish I	4 credits
Sp 102	Reading Spanish II	4 credits
Sp 103	Reading Spanish III	4 credits
	An intensive study of the morphological and syntactical patterns of written Spanish, together with its lexicon, to equip the student with the skills necessary to read and translate the standard written text. For non-majors and non-minors only.	

Sp 110	Idioma castellano I	8 credits
Sp 210	Idioma castellano II	8 credits
Sp 220	Idioma castellano III	8 credits
Sp 301	Geografia del mundo hispanico	4 credits
Sp 302	Historia del pueblo hispanico	4 credits
Sp 303	Iniciacion a la literatura en lengua castellana	4 credits
	Los generos literarios, la explicacion de texto y la versificacion.	
Sp 306	La Generacion del 98	4 credits
Sp 308	El Siglo XIX en Espana	4 credits
Sp 410	El Siglo XVIII en Espana	4 credits

Sp 425	El Siglo XIX en Hispanoamerica	4 credits
Sp 430	El Siglo XX en Hispanoamerica	4 credits
Sp 450	Metodologia de la ensenanza del castellano	4 credits
Sp 451	La civilizacion espanola	4 credits
Sp 452	Perfeccionamiento del idioma	4 credits
	Integran estas tres asignaturas un "Cursillo de Verano" destinado a los profesores de colegio para perfeccionar sus conocimientos del idioma y de la civilizacion y para demostrar los principios de su pedagogia.	
Sp 490	Estudios literarios	2-8 credits
	Analisis intensivo de autores, de obras o de problemas determinados.	

Greek Courses

Gk 101	Greek Language I	4 credits
Gk 102	Greek Language II	4 credits
Gk 103	Greek Language III	4 credits
	A functional treatment of the phonology, morphology, syntax and lexicon of Koine Greek with readings from the New Testament.	
Gk 204	Attic Greek	4 credits
	A transitional course to the Attic dialect with selections from Xenophon and Herodotus.	
Gk 205	Greek Oratory	4 credits
	Selections from the Attic orators.	
Gk 206	Greek Lyric Poetry	4 credits
Gk 307	Plato	4 credits
	Selections from the dialogues.	
Gk 308	Greek Drama	4 credits
Gk 309	Greek Epic Poetry	4 credits
	Introduction to the Homeric dialect with readings from the Iliad and Odyssey.	
Gk 413	History of the Athenian Constitution	4 credits
Gk 414	Biographies of Famous Greek Leaders	4 credits
Gk 415	Greek Mythology and Religion	4 credits
Gk 490	Special Topics	2-8 credits
	Supervised study of specific aspects of Greek language and literature.	

Latin Courses

Lt 101	Latin Language I	4 credits
Lt 102	Latin Language II	4 credits
Lt 103	Latin Language III	4 credits
	The phonology, morphology, syntax and lexicon of Classical Latin.	
Lt 204	Cicero's Essays	4 credits
Lt 205	Roman Oratory	4 credits
Lt 206	Roman Poetry	4 credits
	Selections from Catullus, Horace, Ovid and Tibullus.	
Lt 307	Roman Philosophers	4 credits
Lt 308	Roman Comedy	4 credits

Classical Languages Courses

Lt 309	Vergil's Aeneid	4 credits
Lt 410	Roman Historians	2-4 credits
	Selections from Livy, Caesar and Sullust.	
Lt 411	Cicero's Rhetoric	2-4 credits
	The principles of Roman rhetorical style.	
Lt 412	Latin Patristic Literature	2-4 credits
	Selections from the Latin Fathers	
Lt 413	Roman Satire	4 credits
Lt 414	Roman-Alexandrian Poets	4 credits
Lt 415	Roman Tradition and Religion	4 credits
Lt 450	Methodology of Teaching	4 credits
Lt 451	Roman Civilization	4 credits
Lt 452	Linguistic Improvement	4 credits
	A summer institute for Latin teachers in the secondary schools designed to upgrade their own linguistic and professional proficiency.	
Lt 490	Special Topics	2-8 credits
	Supervised study of specific aspects of Latin language and literature.	



Mathematics

Andre L. Yandl, Ph.D., *Chairman*

Objectives

The Mathematics department offers two undergraduate programs. The first, leading to the Bachelor of Science degree, is designed to prepare the student for advanced study and professional work in mathematics. The second, for students wishing a more flexible program which provides for a concentration of work in a secondary field, leads to the Bachelor of Arts degree.

Degrees Offered

- Bachelor of Science
- Bachelor of Arts
- Master of Science in Natural Science

General Program Requirements

Students in mathematics must satisfy the core curriculum requirements of the University as given on page 24 of this bulletin and those of the College of Arts and Sciences on page 32. Either French or German may be taken to fulfill the language requirement. A minimum grade of C is required in all mathematics courses applied toward the major. See programs of study below for additional requirements.

Advanced Placement in Calculus

Students who have completed a college level course in calculus in high school and have taken the Advanced Placement test in calculus of the College Entrance Examination Board may petition the department for placement on the basis of their test results. Advanced placement and credit may be granted to students whose test scores are 3 or above.

Honors Work in Mathematics

For superior students the department offers honors work consisting of a year of independent study under the supervision of a senior faculty member. Normally the work will be done during the senior year at a level beyond that of the regular undergraduate courses and will culminate in the writing of a term paper or senior thesis. Students who wish to undertake this program will be encouraged to take Mt 311 in the sophomore year and a 400 level series in their junior year in order to have the background sufficient to conduct their independent study. The independent study is an addition to the regular course requirements for the Bachelor of Science degree. No special distinction will be made in the degree earned by students completing the program.

Departmental Requirements

BACHELOR OF SCIENCE—64 hours in mathematics which must include Mt 131, 132, 133, 237, 238, 239, 411, 412, 413, 431, 432, 433 and 16 additional hours in upper division mathematics. In certain circumstances, with the approval of the department chairman, 12 hours of upper division work in a physical science may be substituted for 12 hours in mathematics. Students in this program must maintain a cumulative grade point average and a mathematics grade point average of 2.50.

BACHELOR OF ARTS—50 hours in mathematics which must include Mt 131, 132, 133, 237, 238, 239, 311 and 22 additional hours of approved upper division mathematics. General physics is recommended as an elective.

UNDERGRADUATE MINOR—28 hours of mathematics which must include Mt 131, 132, 133 plus 16 hours of approved electives beyond college algebra.

TEACHING MAJOR (Secondary level for School of Education)—44 hours of mathematics which must include Mt 131, 132, 133, 237, 300, 311, 321 plus 16 hours of approved electives beyond college algebra.

Bachelor of Science

Freshman year

English 100, 160 and core elective	12 hours
History 102 and core elective	8 hours
Mathematics 131, 132, 133	12 hours
Philosophy 125, 150, 175	12 hours
Physics 109	3 hours

Sophomore year

Mathematics 237, 238, 239	12 hours
Physics 200, 201, 202	15 hours
Philosophy 225, 250	8 hours
Theology 120	4 hours
Electives	10 hours

Junior year

Language 101, 102, 103	12 hours
Mathematics 411, 412, 413 or 431, 432, 433	12 hours
Theology 220, 320 and core elective	12 hours
Electives	12 hours

Senior year

Mathematics 411, 412, 413 or 431, 432, 433	12 hours
Electives	24 hours

Total.....180 hours

Bachelor of Arts

Freshman year

English 100, 160 and core elective	12 hours
History 101, 102 and core elective	12 hours
Mathematics 131, 132, 133	12 hours
Philosophy 125, 150, 175	12 hours

Sophomore year

English core elective	4 hours
Mathematics 237, 238, 239	12 hours
Philosophy 225, 250	8 hours
Science or Social Science	12 hours
Theology 120	4 hours
Electives	8 hours

Junior year

Language 101, 102, 103	12 hours
Mathematics 311, electives	12 hours
Minor	12 hours
Theology 220, 320 and core elective	12 hours

Senior year

Mathematics	16 hours
Minor or electives	8 hours
Electives	12 hours

Total.....180 hours

Mathematics Courses

- Mt 10 Basic Algebra** **No credit**
 Concepts, terminology, and notation of algebra; drill in the fundamental operations of algebra. Evening classes only.
- Mt 20 Basic Geometry** **No credit**
 Fundamentals of plane geometry; basic concepts and formulas from solid geometry. Evening classes only. Prerequisite: Mt 10 or one unit of high school algebra.
- Mt 101 Intermediate Algebra** **4 credits**
 Review of the fundamental operations of algebra; laws of exponents; linear and quadratic equations; systems of equations. Prerequisite: Mt 20 or one unit each of high school algebra and geometry. *Does not satisfy core curriculum requirements.*
- Mt 110 Trigonometry** **4 credits**
 Trigonometric and inverse trigonometric functions, identities, equations, and graphs; logarithms. Prerequisite: Mt 101 or one and one half units of high school algebra. *Does not satisfy core curriculum requirements.*
- Mt 111 College Algebra** **4 credits**
 Logic and sets; functions and relations; the real and complex number systems; the algebra of functions; matrices; elementary combinatorial analysis and probability. Prerequisite: Mt 110 or high school trigonometry.
- Mt 114 Elementary Electronic Computer Programming** **3 credits**
 Fundamentals of digital computing. FORTRAN language basic instruction; flow charts, loops, subroutines. Operation of the 1620 system and supporting equipment of the University Computer Center. One two-hour laboratory period per week. Prerequisites: Mt 20 and Mt 101. *Does not satisfy core curriculum requirements.*
- Mt 131 Calculus and Analytic Geometry I** **4 credits**
 Derivative and elementary differentiation formulas; anti-differentiation; integration; basic concept of analytic geometry. Prerequisite: Mt 111 or qualifying examination.
- Mt 132 Calculus and Analytic Geometry II** **4 credits**
 The transcendental functions and their derivatives; techniques of integration, introduction to the underlying theory of differential and integral calculus. Prerequisite: Mt 131.
- Mt 133 Calculus and Analytic Geometry III (231)** **4 credits**
 Applications of differential and integral calculus; polar coordinates; infinite series. Prerequisite: Mt 132.
- Mt 170 Fundamental Concepts of Mathematics I** **4 credits**
- Mt 171 Fundamental Concepts of Mathematics II** **4 credits**
 Introduction to some fundamental concepts of mathematics; sets and logic; congruences, the representation of numbers, topics from arithmetic, algebra and geometry; infinite sets; a brief introduction to calculus. Prerequisites: Mt 101 or qualifying examination for 170; 170 for 171.
- Mt 200 Theory of Arithmetic** **4 credits**
 Systems of numeration; sets; relations, equivalence relations, equivalence classes; number systems, and the integration of these concepts. Prerequisite: Mt 101 or 170.
- Mt 214 Principles of Digital Computers and Coding** **3 credits**
 Number systems, machine components, basic machine language, Symbolic Programming System (SPS), operating principles. Assigned problems are processed on the 1620 system of University Computer Center. Prerequisite: Mt 114.
- Mt 237 Linear Algebra and Analysis I** **4 credits**
 Solid analytic geometry; vectors in three dimensions; partial differentiation, multiple integration. Prerequisite: Mt 133.
- Mt 238 Linear Algebra and Analysis II** **4 credits**
 Linear algebra; vector spaces; eigen value problems; complex vector spaces; Fourier series. Prerequisite: Mt 237.
- Mt 239 Linear Algebra and Analysis III** **4 credits**
 Implicit function theorem; transformations; functions defined by integrals; vector field theory; the theorems of Green and Stokes; introduction to differential equations. Prerequisite: Mt 238.
- Mt 241 Elementary Differential Equations** **4 credits**
 Methods of solving first order equations; linear equations with constant coefficients; Laplace transforms; series solutions of linear differential equations. Prerequisite: Mt 133.
- Mt 300 Methods for Secondary School Mathematics** **4 credits**
 Special topics in mathematics relevant to the high school curriculum; emphasis on basic concepts and procedures for teaching them. Prerequisite: Mt 133 or permission of instructor.
- Mt 311 Foundations of Algebra and Analysis** **4 credits**
 An introduction to concepts basic for study of abstract algebra; sets and cardinal numbers; elementary theory of groups, rings and fields. Prerequisite: Mt 237 or permission of instructor.
- Mt 315 Number Theory** **4 credits**
 Divisibility and the Euclidean algorithm; the Euler Phi-function; congruences; quadratic reciprocity law; numerical functions; the Mobius inversion formula. Prerequisite: Mt 132.
- Mt 321 Foundations of Euclidean Geometry** **4 credits**
 Introduction to the axiomatic foundations of Euclidean geometry; ruler and compass constructions and the famous problems of antiquity; the 5th postulate and non-Euclidean geometries. Prerequisite: Mt 132.
- Mt 322 Advanced Geometry** **4 credits**
 Selected topics from among convexity, applications of geometry, geometry in other subjects, transformation groups from the geometric viewpoint. May be repeated for credit with permission. Prerequisites: Mt 133 and 311, or permission.

- Mt 351 Probability** 4 credits
Basic concepts and theorems in probability theory: the binomial, Poisson, normal, and other fundamental probability distributions; moments; limit theorems. Prerequisite: Mt 237.
- Mt 371 Introduction to Numerical Methods** 4 credits
Approximation and errors; Newton's and Lagrange's formulas; finite differences and operators; numerical integration; numerical solution of differential equations. Three lectures per week. Two lab hours per week. Prerequisites: Mt 114, 133.
- *Mt 405 Fundamental Concepts of Analysis** 5 credits
The Peano axioms and the construction of the real number system; the complex number system; the limit concept in analysis. Prerequisite: One year of calculus.
- *Mt 410 Survey of Modern Algebra** 5 credits
Number systems, congruences, equivalence relations, groups, rings, integral domains and fields. Stress on the logic of postulational mathematics and its pertinence to the teaching of algebra. Prerequisite: One year of calculus.
- Mt 411 Introduction to Abstract Algebra I** 4 credits
Mt 412 Introduction to Abstract Algebra II 4 credits
Mt 413 Introduction to Abstract Algebra III 4 credits
The theory of groups, rings, fields and field extensions; vector spaces and linear transformations; special topics. Prerequisites: Mt 311 for Mt 411; Mt 411 for Mt 412; Mt 412 for 413.
- *Mt 415 Linear Algebra and Matrix Theory** 5 credits
Introduction to the theory of matrices and determinants, vector spaces, linear transformations. Prerequisite: One year of calculus.
- *Mt 420 Survey of Geometric Theories** 5 credits
Selected topics in finite geometry, projective geometry and non-Euclidean geometry. Prerequisite: One year of calculus.
- *Mt 425 Foundations of Geometry** 5 credits
A study of the axiomatic nature of geometry with particular attention to the meaning and role of "undefined terms," "definitions," "axioms," and "proofs." Prerequisite: One year of calculus.
- *Mt 430 Introduction to Higher Analysis** 5 credits
Concepts of function, limits and continuity, derivative and anti-derivative, the Riemann Integral. Prerequisite: calculus and one upper division course in modern mathematics.
- Mt 431 Introduction to Real Analysis I** 4 credits
Mt 432 Introduction to Real Analysis II 4 credits
Mt 433 Introduction to Real Analysis III 4 credits
A rigorous introduction to real analysis: limits, continuity, differentiation of real functions; functions on metric spaces; application of compactness and connectedness; Riemann-Stieltjes integrals; sequences and series of functions; elements of Lebesgue theory. Prerequisites: Permission for Mt 431; Mt 431 for Mt 432; Mt 432 for Mt 433.
- *Mt 435 Introduction to Complex Variables** 5 credits
Covers the same topics as Mt 437. For high school teachers. Prerequisite: Mt 241 or 430 or 460 or equivalents.
- Mt 437 Introduction to Complex Variables** 4 credits
The complex number system, analytic functions, integration, series, residues, conformal mapping. Prerequisite: Mt 241.
- *Mt 450 Probability and Statistics** 5 credits
Truth tables, sets, combinatorial algebra; compound and conditional probability, random variables and distribution functions; elements of statistical inference. Prerequisite: One year of calculus.
- *Mt 460 Topics in Applied Mathematics** 5 credits
Introduction to differential equations and vector analysis; application to simple problems of rates, trajectories, harmonic motion, electrical circuits and related topics. Prerequisite: One year of calculus.
- Mt 461 Advanced Engineering Mathematics I** 3 credits
An introduction to the theory of functions of a complex variable: analytic functions, mappings, integration, series, residues. Prerequisite: Mt 241.
- Mt 462 Advanced Engineering Mathematics II** 3 credits
Fourier series, Legendre polynomials, Bessel functions, and applications to boundary value problems. Prerequisite: Mt 461.
- Mt 463 Advanced Engineering Mathematics III** 3 credits
Linear algebra, matrices and determinants, introduction to vector analysis. Prerequisite: Mt 462.
- *Mt 470 Computer Programming and Numerical Analysis** 5 credits
An introduction to numerical methods and algorithms; approximations and errors; introduction to computer programming and Fortran and its use to implement numerical techniques under study. Prerequisite: One year of calculus.
- Mt 471 Numerical Analysis** 4 credits
Matrix inversion; systems of linear equations; a fixed point theorem and its applications; initial and boundary value problems; methods of Runge-Kutta and Hermite; finite differences. Prerequisites: Mt 237, 241.
- Mt 481 Elementary Topology** 4 credits
Set theory; topology of the real line; topological spaces; metric spaces. Prerequisite: Mt 311.
- Mt 491 Special Topics in Mathematics** 2-4 credits
May be repeated for a maximum of 12 credits. Prerequisite: Permission.
- Mt 499 Independent Study** 1-5 credits
May be repeated for a maximum of 10 credits. Prerequisite: Permission.

*Offered summer only for high school teachers in the master's degree program in natural science.



Objectives

The Medical Record Science Program is designed to prepare the student for a career in an administrative health care profession by providing a comprehensive four-year program of liberal arts and science. In the fourth year emphasis is on professional activities and interaction with the health care industry. Students who complete the program are eligible for registration with the American Association of Medical Records Librarians.

Degree Offered

Bachelor of Medical Record Science.

General Program Requirements

Candidates must satisfy the general core curriculum requirements of the University. Transfer students from Carroll and Whitworth College are accepted for the fourth year.

Degree Requirements

20 hours of science, 12 hours of language and 12 hours of psychology are required. Mathematics 101 may be replaced by an elective if the math score is sufficiently high on the College Placement Test. Psychology 210 is recommended.

MR 401 Medical Record Science I	6 credits
Introduction to medical record science; orientation to medical institutions, history of medical records, professional ethics; a study of the medical record, its components, development and use.	
MR 402 Medical Record Science II	5 credits
Gathering, evaluating and retrieval of health information; health statistics and research techniques; preservation of records, coding and indexing of medical information.	
MR 403 Medical Record Science III	3 credits
Study of related medical record systems for departments of the hospital and other health care facilities. Extended care and psychiatric facilities. Impact of Medicare. Organization and function of medical staff and responsibility of RRL to medical staff.	
MR 422 Medical Terminology	3 credits
MR 425 Medical Science I	3 credits
Nature and cause, treatment and management of patients covering circulatory, respiratory, hemic and lymphatic, musculoskeletal, integumentary, urogenital and female reproductive systems.	
MR 426 Medical Science II	2 credits
Diseases of endocrine and nervous systems, special senses, psychobiologic units, treatment of disease including drugs, laboratory tests and anesthesia.	

Bachelor of Medical Record Science

Freshman year

Chemistry 100	4 hours
English 100, 160, core elective	12 hours
History 102 and core elective	8 hours
Mathematics 101 or elective	4 hours
Philosophy 125, 150, 175	12 hours
Elective	4 hours

Sophomore year

Biology 150	4 hours
Business 230	4 hours
Economics 271, 272	8 hours
Language 101, 102, 103	12 hours
Philosophy 225, 250	8 hours
Psychology 100	4 hours
Theology 120	4 hours
Elective	4 hours

Junior Year

Biology 220, 270, 271	12 hours
Business 270, 380	8 hours
Psychology 201, 390	8 hours
Theology 220, 320 and core elective	12 hours
Elective	4 hours

Senior year

Medical Record Science 401, 402, 403, 422, 425, 426, 440, 450, 455, 470, 475, 494 and 495	44 hours
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Total.....180 hours

Medical Record Science Courses

MR 440 Directed Practice	6 credits
Supervised learning experience in which the student develops skill in learning to deal with personnel, to preserve the confidential nature of medical records and to work with other personnel.	
MR 450 Organization and Administration I	3 credits
Management of health information center; hospital organization and functions; the hospital's role in the community and in education.	
MR 455 Organization and Administration II	4 credits
Control and management of information personnel in office setting. Budget, layout, work simplification, motivation and job analyses.	
MR 470 Legal Concepts for Health Fields	3 credits
Principles of law as applied to the health field, with particular reference to all phases of medical record practice.	
MR 475 Data Processing	2 credits
Data processing systems and their application of newer techniques in handling information in medical institutions.	
MR 494 Seminar in Organization and Administration	2 credits
Problems in organization and administration of Medical Record department.	
MR 495 Seminar in Management of Medical Record Department	2 credits
Problem solving, human relations, ethics, accreditation problems.	

Medical Technology

George A. Santisteban, Ph.D., Adviser

Objectives
The Medical Technology Program is designed to prepare the student for a professional career as a medical technologist or as a laboratory assistant in a biological research laboratory. Although there is a heavy concentration in basic sciences, the program is also designed to provide a liberal arts education.

Degree Offered
Bachelor of Science in Medical Technology

General Program Requirements
Students in this program must satisfy the core curriculum requirements of the University as given on page 24 of this bulletin, and those of the College of Arts and Sciences on page 32.

Degree Requirements
Three years must be spent in academic work on campus and a fourth year of internship in an approved hospital. Those who successfully complete the year of internship will be granted 36 hours of credit toward a degree from Seattle University and are eligible for certification by the Registry of Medical Technologists. The 36 credits for internship will be granted only to those who have spent at least one full year on campus prior to interning. Hence such credits are not granted to students who have interned from some other school

Objectives
The mission of the United States Army Detachment of Military Science is to train and ultimately commission as junior officers in the Army Reserve and Regular Army those male students who fulfill the academic and leadership requirements prescribed in the advanced program in conformance with the principles and educational aims of Seattle University. The program of instruction covers military fundamentals common to all branches of the service.

Degree Offered
Bachelor of Science in Military Science

General Program Requirements
Students in military science must satisfy core curriculum requirements of the University as specified on page 24 of this bulletin and those of the College of Arts and Sciences given on page 32. See programs of study below for additional requirements.

Programs
Three distinct programs are administered by the Military Science department; the basic course, the advanced course, through which the student may receive a commission in the Army, and the degree program in military science.

BASIC PROGRAM—The basic course is elective for all physically fit male students at the University.

and come to Seattle University to complete their degree. Bl 270 and 271 are recommended.

Bachelor of Science in Medical Technology

Freshman year
Biology 150, 170 and elective..... 12 hours
English 100, 160, core elective..... 12 hours
Mathematics 110 and 111 or 111 and 131..... 8 hours
Philosophy 125, 150, 175..... 12 hours
Social Science 4 hours

Sophomore year
Biology 300, 330 and elective..... 12 hours
Chemistry 114, 115, 116 and 119..... 15 hours
History 102 and core elective..... 8 hours
Philosophy 225 4 hours
Theology 120, 220 8 hours

Junior year
Chemistry 225, 226 and electives..... 13 hours
Language or Fine Arts 101, 102, 103..... 12 hours
Philosophy 250 4 hours
Social Science 8 hours
Theology 320 and core elective..... 8 hours
Elective 4 hours

Senior year
Internship 36 hours

Total..... 180 hours

Military Science

Col. John L. Robinson, B.S., Chairman

The course consists of two hours of classroom instruction and one drill period of one hour and twenty minutes per week for six academic quarters. Students may volunteer for the Army Reserve but will not be required to perform ready service training in excess of ROTC training. Participation in ROTC training alone is not creditable toward longevity for retirement or pay in the military service.

ADVANCED PROGRAM—The advanced program is elective for qualified male students who have successfully completed the two-year basic course or who have successfully completed a summer camp of approximately six weeks in duration prior to their junior year. Applicants for the program are required to achieve a satisfactory grade on the ROTC qualifying examination, be eligible for graduation and commissioning prior to reaching their 28th birthday, fulfill the medical requirements of the Army physical examination and satisfy the academic requirements of the University in the major field they have selected. Final selection of candidates will be accomplished by a board of military staff officers. The advanced course consists of two hours of classroom instruction and one drill period per week for the fall quarter of the junior year and the spring quarter of the senior year and three hours of classroom instruction and one drill period per week for the remaining quarters of each year. Students in the advanced program receive \$50 per month retainer pay during the two years in the program.

Transfer students and other students who have not completed the basic program may be enrolled in the advanced course after successfully completing a summer camp of approximately six weeks in duration prior to their junior year. This camp will serve as a substitute for the two-year basic course. Students in the two-year program will receive \$50 per month during the two years in the program.

DEGREE PROGRAMS—Requirements for the three degree programs in military science are listed below.

Departmental Requirements

BACHELOR OF SCIENCE IN MILITARY SCIENCE (Humanities and Social Science option)—40 hours of military science courses as listed below with a minor concentration in humanities and social science plus 12 hours beyond core curriculum requirements in two of the following areas: science, political science or mathematics.

BACHELOR OF SCIENCE IN MILITARY SCIENCE (Science option)—40 hours of military science courses as listed below with a minor concentration in biology, chemistry, physics or psychology.

BACHELOR OF SCIENCE IN MILITARY SCIENCE (Engineering option)—40 hours of military science courses with a concentration in engineering as listed below.

UNDERGRADUATE MINOR—40 hours for four-year students which must include MS 101, 102, 103, 201, 202, 203, 301, 302, 303, 304, 401, 402 and 403. Thirty-two hours for two-year ROTC program students which must include MS 204, 301, 302, 303, 304, 401, 402 and 403. In addition, attendance at seminars in map reading and military history while enrolled in 300 and 400 level courses is required in the two-year program.

Scholarships

Full tuition, fees and book scholarships for either two or four years are offered to selected students who desire a military career. In addition, scholarship students are paid \$50 per month. Further information concerning scholarships can be obtained by writing to Professor of Military Science, Seattle University.

Bachelor of Science in Military Science Humanities and Social Sciences Option

Freshman year

English 100, 160 and core elective	12 hours
History 102 and core electives	8 hours
Military Science 101, 102, 103	6 hours
Philosophy 125, 150, 175	12 hours
Elective	4 hours

Sophomore year

English core elective	4 hours
Mathematics 111 and 131 or 170 and 171	8 hours
Military Science 201, 202, 203	6 hours
Philosophy 225, 250	8 hours
Political Science 160	4 hours
Social Science	8 hours
Theology 120	4 hours

Junior year

Language 101, 102, 103	12 hours
Military Science 301, 302, 303, 304	16 hours
Minor	12 hours
Theology 220, 320 and core elective	12 hours

Senior year

Military Science 401, 402, 403	12 hours
Minor	12 hours
Political Science 200, 214, 218	12 hours
Electives	8 hours

Total.....180 hours

Bachelor of Science in Military Science Science Option

Freshman year

English 100, 160 and core elective	12 hours
History 102 and core elective	8 hours
Military Science 101, 102, 103	6 hours
Philosophy 125, 150, 175	12 hours
Elective	4 hours

Sophomore year

Mathematics 111 and 131, or 170 and 171	8 hours
Military Science 201, 202, 203	6 hours
Philosophy 225, 250	8 hours
Political Science 160	4 hours
Science	12 hours
Theology 120	4 hours

Junior year

Language 101, 102, 103	12 hours
Military Science 301, 302, 303, 304	16 hours
Science (chemistry, biology, physics or psychology)	12 hours
Theology 220, 320 and core elective	12 hours

Senior year

Military Science 401, 402, 403	12 hours
Political Science 200, 214, 218	12 hours
Science	12 hours
Electives	8 hours

Total.....180 hours

Bachelor of Science in Military Science Engineering Option

Freshman year

English, 100, 160	8 hours
Mathematics 111, 131, 132	14 hours
Mechanical Engineering 100, 110, 112	6 hours
Military Science 101, 102, 103	6 hours
Philosophy 125, 150	8 hours
Physics 200	5 hours

Sophomore year

Electrical Engineering 251, 253	8 hours
Mathematics 231, 232	8 hours
Mechanical Engineering 271, 281	8 hours
Military Science 201, 202, 203	6 hours
Philosophy 175	4 hours
Physics 201, 202	10 hours
Theology 120	4 hours

Junior year

Chemistry 314, 315	8 hours
Electrical Engineering 254	2 hours
Mathematics 114	3 hours
Military Science 301, 302, 303, 304	16 hours
Philosophy 225, 250	8 hours
Social Science	12 hours
Theology 220	4 hours

Senior year

English core elective	4 hours
Engineering electives	12 hours
History 102 and core elective	8 hours
Military Science 401, 402, 403	12 hours
Theology 320 and core elective	8 hours
Total	192 hours



Military Science Courses

- MS 100 Military Drill and Command (Leadership Laboratory) 0 credits**
Techniques of manual of arms and marching formations. Progression from student to instructor positions. Stress on progressive training with the objective of developing initiative and self-confidence. *MS 100 and 200 level students must register for this course at registration each quarter. MS 300 and 400 level students are assigned positions each quarter.*
- MS 101 Organization of the Army and ROTC 2 credits**
History and organization of the ROTC and reasons for continued growth. Purpose and objective of military organization of the United States military establishment. Marksmanship, counterinsurgency and other selected military subjects. *Must register for MS 100. Fall.*
- MS 102 US Army and National Security 2 credits**
Discussion of US national defense policy and worldwide US commitments that require the support of the Armed Forces. *Must register for MS 100. Winter.*
- MS 103 Basic Map Reading 2 credits**
Study of the basic principles of ground navigation. First aid and other selected military subjects. *Must register for MS 100. Spring.*
- MS 201 Advanced Map Reading 2 credits**
Application of the principles of map reading, emphasizing terrain appreciation and evaluation, methods of orientation, aerial photography. *Must register for MS 100. Fall.*
- MS 202 American Military History 2 credits**
A survey of American military history from the origin of the US Army to the end of World War II. A study of the principles of war and their application or lack of application in US military campaigns. *Must register for MS 100. Winter.*
- MS 203 American Military History and Tactics 2 credits**
United States military history to the present. Organization, composition and mission of basic military units. Tactical training of the individual soldier. *Must register for MS 100. Spring.*
- MS 204 Basic Summer Camp 4 credits**
Map reading, US arms and national security, military history and training in various military subjects. Six weeks during the summer at a military reservation designated by the Department of the Army. *A substitute for the basic course for selected two-year program students. Summer.*
- MS 301 Military Leadership and Teaching Principles 4 credits**
Educational psychology as it pertains to the five stages of instructional techniques. Methods of instruction used in training, including use and availability of training aids. Selected military subjects. Two one-hour conferences and one leadership laboratory (80 minutes) per week. *Fall.*

- MS 302 Military Psychology and Leadership, Tactics 4 credits**
Responsibilities and basic qualities of leadership, human behavior and adjustment to Army life. Functions and special problems of military leadership. Conduct of guerilla warfare. Preparation for advanced summer camp. Three one-hour conferences and one leadership laboratory (80 minutes) per week. *Winter.*
- MS 303 Small Unit Tactics, Leadership and Communications 4 credits**
Principles of offensive and defensive combat and their application to subordinate units of the infantry division. Branches of the Army. Selected military subjects. Three one-hour conferences and one leadership laboratory (80 minutes) per week. *Spring.*
- MS 304 Advanced Summer Camp 4 credits**
Arms qualification; practical application of tactics; leadership training and practice. Six weeks during the summer at a military reservation designated by the Department of the Army. Prerequisite: MS 303. *Summer.*
- MS 401 Military Law 4 credits**
Provisions of the Uniform Code of Military Justice. Procedure prior to trial; apprehension and restraint, preferring action and investigating charges. Duties of the junior officer in the application of military justice and its role in military discipline. Staff operations at battalion level. Three one-hour conferences and one leadership laboratory (80 minutes) per week. *Fall.*
- MS 402 Military Logistics and US Role in World Affairs 4 credits**
Supply, movement and transportation functions within the United States Army. Analysis of the United States in its role with other nations and the effect of other nations on the United States, particularly the military establishment. Three one-hour conferences and one leadership laboratory (80 minutes) per week. *Winter.*
- MS 403 Army Administration 4 credits**
Role of the junior officer in unit administration and familiarization with Department of the Army publications. Pre-commissioning orientation. Two one-hour conferences and one leadership laboratory (80 minutes) per week. *Spring.*
- MS 404 Flight Training 4 credits**
36 hours ground school, 35 ½ hours flight instruction, dual and solo, conducted by FAA approved flight school. Costs paid by the Department of the Army. Private pilot's license may be obtained on completion of the course. Prerequisite: *Must be enrolled as an MS IV in the Military Science program and meet physical requirements. Credit only when course is completed Spring quarter. Fall, Winter and Spring.*

Philosophy

James B. Reichmann, S.J., Ph.D., *Chairman*

Objectives

The understanding of ourselves and of the world around us, which a university education attempts to develop, is neither simple nor facile. It must be accomplished along many lines of inquiry and by means of diverse methods. Throughout the history of education, philosophy has always been one of the most fruitful avenues of approach.

The task of philosophy has been and is to study the world in terms of that which constitutes its innermost being and reality. It seeks to discover those all-pervasive factors in the world which refuse to yield to the segregating tendencies of our fragmentary, piece-meal courses of study. It asks such profoundly searching questions as: What is the nature of reality? What is the meaning of existence? What is the nature of value and, is there any absolute value? What is man and his destiny? What is the nature of knowledge? Is there a God and can His existence be rationally determined?

The philosophy taught at Seattle University is part of a long tradition, a tradition which might be labelled, for want of better words, the *philosophia perennis*. It recognizes its debt to the past. Like any growing, expanding branch of knowledge it builds on the achievements of those who have gone before. But it also realizes that if it is to continue to advance and grow it must always be open to new problems, new ideas, new contributions, new perspectives and attitudes.

Degree Offered

Bachelor of Arts

University Philosophy Requirements

The Philosophy department contributes to the core curriculum required of all students at Seattle University. The philosophy core consists of 20 quarter hours. There are five courses in this program each of four quarter hours. It is highly desirable that the first three courses be taken in the freshman year and the remaining two courses in the sophomore year. The core offerings attempt to combine the best features of both the historical and the systematic approaches to philosophy.

Logic, which was formerly a requirement for all students at the University, has now been made an upper division course required of philosophy majors only. However, the essential themes of logic are included and stressed in the core courses.

In his freshman year, the student will take three courses. In the fall quarter he will take an introduction to philosophical thinking as exemplified by early Greek philosophers. He will study from primary sources such authors as Parmenides, Heraclitus, Plato and Aristotle. During the winter quarter the student will study a medieval synthesis as exemplified in the writings of St. Thomas Aquinas. This course will not only provide an historical dimension but will also investigate in depth the metaphysics of St. Thomas. In the spring quarter the student will study representatives of mod-

ern philosophy. He will investigate the writings of such philosophers as Descartes, Locke, Berkeley, Hume and Kant.

During his second year the student will study two systematic courses: one will investigate the problems of man and his knowledge, the other will study general problems of value and ethics with several applications to concrete situations.

Students transferring to Seattle University must complete the following philosophy requirements after transferring into the University:*

Transfer students with senior standing (135 or more credits)—2 courses	8 credits
Transfer students with junior standing (90 to 134 credits)—3 courses	12 credits
Transfer students with sophomore standing (44 to 89 credits)—4 courses	16 credits
Transfer students with freshman standing (less than 44 credits)—5 courses	20 credits

The specific courses required in each case shall be determined by consultation with the chairman of the philosophy department.

*An exception to these requirements will be made in the case of transfer students who have successfully completed philosophy courses in their previous institution when such courses plus the above requirements would exceed five major courses in philosophy.

General Program Requirements

Students in philosophy must satisfy the core curriculum requirements of the University given on page 24 of this bulletin and those of the College of Arts and Sciences on page 32. Required sequences are 12 hours of social science, 12 hours of science or 8 hours of mathematics, and 12 hours of language.

Departmental Requirements

BACHELOR OF ARTS—52 hours of philosophy which must include P1 125, 150, 175, 225, 250 and a program of eight seminars approved by the department chairman. Competent students may substitute a written thesis for two of the required seminars. Eight hours of credit are granted for the thesis which is written under the direction of a faculty member appointed by the department chairman. The thesis must be fifty pages in length and should manifest competence in original investigation and effective reporting. A comprehensive examination will be required of all philosophy majors.

UNDERGRADUATE MINOR—32 hours of philosophy which must include P1 125, 150, 175, 225, 250 and three seminars approved by the department chairman.

Bachelor of Arts

Freshman year

English 100, 160 and core elective	12 hours
History 101, 102 and core elective	12 hours
Philosophy 125, 150, 175	12 hours
Social Science	12 hours

Sophomore year

English core elective	4 hours
Language 101, 102, 103	12 hours
Philosophy 225, 250	8 hours
Philosophy seminar	4 hours
Science or mathematics and elective	12 hours
Theology 120	4 hours

Junior year

Minor	12 hours
Philosophy seminars	16 hours
Theology 220, 320 and core elective	12 hours
Elective	4 hours

Senior year

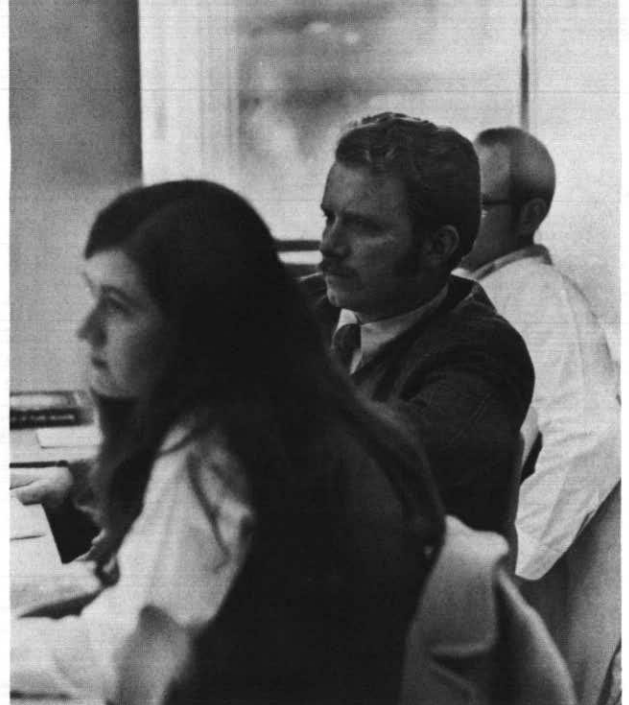
Minor	12 hours
Philosophy seminars	12 hours
Electives and/or minor	20 hours

Total.....180 hours

Philosophy Courses

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| <p>PI 125 Introduction to Ancient Greek Philosophy 4 credits
Readings from source material of the philosophy of the ancient Greeks. Investigation of the topics, problems and doctrines of the Pre-Socratics, Plato and Aristotle.</p> <p>PI 150 Introduction to Medieval Philosophy 4 credits
A typical Christian medieval synthesis seen in its historical perspective with a particular examination of the themes of Thomistic metaphysics. Prerequisite: PI 125.</p> <p>PI 175 Introduction to Modern Philosophy 4 credits
Readings from source material of the modern philosophers. Investigation of topics, problems and doctrines of selected authors from Descartes to Kant. Prerequisite: PI 150.</p> <p>PI 225 Philosophy of Man and His Knowledge 4 credits
A systematic study of man, his nature and his powers. Special emphasis will be given to the human knowing process and the problems of human freedom and personal responsibility. Prerequisite: PI 175.</p> <p>PI 250 Ethics 4 credits
The general theory of moral behavior, ethics as a science, the purpose of human life and the means of attaining this goal. Applications of general ethical theory will be studied in several specific instances. Prerequisite: PI 225.</p> <p>PI 260 Logic I 4 credits
A systematic treatment of "traditional" logic. The themes of communication and language, division and definition, propositions, syllogisms and the nature of science will be examined. Prerequisite: PI 250.</p> <p>PI 261 Logic II 4 credits
An introduction to symbolic or mathematical logic from both an intuitive and formal standpoint. Elementary calculus of classes and relations, and introduction to axiomatic set theory. Boolean Algebra. Of interest to philosophy and mathematics majors. Prerequisites: PI 250 or Mt 111.</p> <p>PI 300 Philosophy of Nature 4 credits
A philosophical appraisal of the material universe, its nature, causes and activities, incorporating the mathematical and experimental findings into the philosophical account of the cosmos. Prerequisites: PI 250 and approval of department chairman.</p> | <p>PI 303 Philosophy of Science 4 credits
Philosophical reflections on the historical development of scientific views of the cosmos. Readings from significant sources. Prerequisites: PI 250 and approval of department chairman.</p> <p>PI 320 Philosophy of Art 4 credits
Philosophical reflection on the nature of art and its reality; beauty as a transcendental property of being and its relationship to art and the artist. Prerequisites: PI 250 and approval of department chairman.</p> <p>PI 330 Philosophy of Education 4 credits
The several philosophies of education that are and have been existent in the American schools. Prerequisites: Ed 200 and approval of department chairman.</p> <p>PI 340 Plato 4 credits
Selected readings from the Dialogues of Plato. Prerequisites: PI 250 and approval of department chairman.</p> <p>PI 350 Aristotle 4 credits
Selected readings from the writings of Aristotle. Prerequisites: PI 250 and approval of department chairman.</p> <p>PI 385 Epicureans, Stoics and Skeptics 4 credits
A survey of post-Aristotelian and pre-Plotinian philosophy, with stress on the writings of the Epicureans, Stoics and Skeptics. Prerequisites: PI 250 and approval of department chairman.</p> <p>PI 390 Plotinus 4 credits
Selected readings from the Enneads of Plotinus. Prerequisites: PI 250 and approval of department chairman.</p> <p>PI 400 St. Augustine 4 credits
Readings from the most important writings of St. Augustine, such as The Confessions, City of God. Prerequisites: PI 250 and approval of department chairman.</p> <p>PI 410 Early Medieval Philosophy 4 credits
Philosophy of the early medieval period from Augustine to Aquinas, including Scotus Erigena, the Arab and Jewish philosophers, Abelard, John of Salisbury, Roger Bacon, Anselm, Albert the Great and Bonaventure. Prerequisites: PI 250 and approval of department chairman.</p> <p>PI 420 St. Thomas Aquinas 4 credits
Selected readings from the writings of St. Thomas Aquinas. Prerequisites: PI 250 and approval of department chairman.</p> |
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- PI 440 Renaissance Philosophy** 4 credits
A survey consisting of readings from important Renaissance philosophers, Erasmus, Ficino, Pomponazzi, Bruno. Prerequisites: PI 250 and approval of department chairman.
- PI 450 Descartes** 4 credits
A consideration of his principal writings, discussion of clear and distinct ideas, the methodic doubt, the existence and attributes of God, the nature of the material world, the mind-body problem. Prerequisites: PI 250 and approval of department chairman.
- PI 455 British Empiricism of the Seventeenth Century** 4 credits
A study of British Empiricism with special emphasis on Locke, Berkeley and Hume. Prerequisites: PI 250 and approval of department chairman.
- PI 456 17th Century Rationalism** 4 credits
The philosophical systems of Spinoza and Leibnitz. Prerequisites: PI 250 and approval of department chairman.
- PI 460 Kant** 4 credits
A seminar in "The Critique of Pure Reason" with a brief supplementary discussion of the moral rationalism of Emmanuel Kant. Prerequisites: PI 250 and approval of department chairman.
- PI 465 Hegel** 4 credits
The philosophy of Hegel with emphasis on "The Phenomenology of Spirit" and "The Philosophy of History." Prerequisites: PI 250, PI 460 and the approval of department chairman.
- PI 467 Philosophy of Communism** 4 credits
An investigation of selected writings from such framers of the philosophy of communism as Marx, Engels, Feuerbach and Lenin.
- PI 470 Philosophy of Society** 4 credits
A consideration of the social nature of man, purpose of society, social groups, the common good, subsidiarity, pluralism and authority. Prerequisites: PI 250 and approval of department chairman.
- PI 475 Linguistic Analysis** 4 credits
Representative readings from among Wittgenstein, Ayer, Ryle, Austin, Strawson, Hampshire, Hare. Prerequisites: PI 250 and approval of department chairman.
- PI 478 Process Philosophy** 4 credits
Selected readings from philosophers of process such as Bergson, Dewey, Whitehead and Teilhard de Chardin. Prerequisites: PI 250, PI 460 and the approval of department chairman.
- PI 480 American Philosophy** 4 credits
A survey of American philosophy with readings from Peirce, James, Royce, Dewey, Whitehead. Prerequisites: PI 250 and approval of department chairman.
- PI 482 Husserl** 4 credits
A study of his phenomenology from representative readings from the *Ideen*, Cartesian Meditations and Formal and Transcendental Logic. Prerequisites: PI 460 and 465.
- PI 483 Heidegger** 4 credits
An investigation of his theory of Being and its relation to man and to time, especially as set forth in "Being and Time" and "The Introduction to Metaphysics." Prerequisites: PI 460 and 465, or approval of department chairman.
- PI 484 Merleau-Ponty** 4 credits
His philosophy as set forth in "The Phenomenology of Perception" and "The Structure of Behavior." Prerequisites: PI 460 and 465, or approval of department chairman.
- PI 487 Contemporary Atheism**
Selected readings from Feuerbach and Nietzsche and from such existentialists as Sartre and Camus. Prerequisites: PI 250 and approval of department chairman.
- PI 488 Early Existentialism** 4 credits
The philosophies of Kierkegaard, Nietzsche and Dostoevsky, with an emphasis on their existentialist trends. Prerequisites: PI 250 and approval of department chairman.
- PI 489 Existentialism** 4 credits
Selected readings from contemporary existentialist figures including Sartre, Heidegger, de Beauvoir, Camus, Jaspers, Marcel and Tillich. Prerequisites: PI 250 and approval of department chairman.
- PI 493 Contemporary Ethical Theory** 4 credits
Selected readings from contemporary moral philosophers such as Hare, Stevenson and Fletcher. Prerequisites: PI 250 and approval of department chairman.
- PI 494 Contemporary Social Ethics** 4 credits
Moral problems facing urbanized man in his contemporary setting. Prerequisites: PI 250 and approval of department chairman.
- PI 495 Value Theory** 4 credits
A survey and critique of various theories of value, including representatives of naturalism, utilitarianism, analysis, existentialism, formalism, moral sense. Prerequisites: PI 250 and approval of department chairman.
- PI 496 Thesis** 8 credits
An original philosophical investigation under the direction of a faculty member appointed by the chairman of the department. Substitute for two of the regularly required courses for philosophy majors. Prerequisites: PI 250 and approval of department chairman.
- PI 497 Special Topics in Philosophy** 4 credits
PI 498 Special Topics in Philosophy 4 credits
PI 499 Special Topics in Philosophy 4 credits
Prerequisites: PI 250 and approval of department chairman.



Physics

John P. Toutonghi, Ph.D., *Chairman*

Objectives

The Physics department has three objectives which are not mutually exclusive. A course in physical science which emphasizes the understanding of the basic concepts of classical and modern physics is offered for students in the liberal arts. Courses offered for majors in science and engineering have the added objective of developing in the student the ability to apply with facility the basic principles of physics in the solution of physical problems. These courses also prepare students for professional careers in physics or related fields.

The Bachelor of Science program in physics is designed for students planning graduate work. The Bachelor of Science in Natural Science program gives the student a solid background in basic and intermediate physics and fulfills the requirements of the American Institute of Physics for a major in this field. The minor in nuclear physics is recommended for students majoring in science and engineering who plan to do research or graduate study in fields involving nuclear science or engineering.

Degrees Offered

- Bachelor of Science
- Bachelor of Science in Natural Science
- Master of Science in Natural Science

General Program Requirements

Students in physics must satisfy the core curriculum requirements of the University given on page 24 of this bulletin and those of the College of Arts and Sciences on page 32. See programs of study below for additional requirements.

Departmental Requirements

BACHELOR OF SCIENCE—74 hours in physics which must include Ph 200, 201, 202, 310, 311, 330, 331, 332, 360, 361, 362, 375, 450, 451, 470, 481, 485 and 486. Ph 376, 475 and 491 may be substituted for Ph 485 and 486.

BACHELOR OF SCIENCE IN NATURAL SCIENCE—49 hours in physics which must include Ph 200, 201, 202, 310, 311, 330, 331, 332, 360, 361, 375 and 470. Premedical option: Bl 150, 230, 240 and 450, Ch 235, 236 and 455. Health physics option: Bl 150, 200, 210 and 450; Ch 235, 236 and 455, Ph 376 and 475.

TEACHING MAJOR (SCHOOL OF EDUCATION)—43 hours of physics which must include Ph 200, 201, 202, 310, 311, 330, 331, 332, 360, 375, 376, Ch 114 and 26 hours of mathematics including Mt 111, 131, 132, 231, 232 and 241.

UNDERGRADUATE MINOR—27 hours in physics which must include Ph 200, 201, 202 and 12 hours selected from upper division courses.

UNDERGRADUATE MINOR IN NUCLEAR PHYSICS—31 hours in physics which must include Ph 200, 201, 202, 360, 375, 376, 470 and 475.

MASTER OF SCIENCE IN NATURAL SCIENCE—45 hours in courses numbered 400 or higher which may include Ph 412, 422, 432, 452, 533, 562, 563, 572, 573 and 574; 20 hours selected from corresponding programs in chemistry or mathematics.

Bachelor of Science

Freshman year

Chemistry 114, 115, 116.....	12 hours
English 100, 160	8 hours
Mathematics 131, 132, 133	12 hours
Physics 200, 201.....	10 hours
Electives	4 hours

Sophomore year

History 102 and core elective.....	8 hours
Mathematics 237, 241.....	8 hours
Philosophy 125, 150, 175.....	12 hours
Physics 202, 310, 311.....	13 hours
Electives	4 hours

Junior year

English core elective	4 hours
Philosophy 225, 250.....	8 hours
Physics 330, 331, 332, 360, 361, 362.....	25 hours
Theology 120	4 hours
Electives	4 hours

Senior year

Physics 375, 450, 451, 470 and either 481, 485 and 486 or 376, 475, 491, 492.....	26 hours
Theology 220, 320 and core elective.....	12 hours
Electives	8 hours

Total.....182 hours

Bachelor of Science in Natural Science

Freshman year

Chemistry 114, 115, 116.....	12 hours
English 100, 160 and core elective.....	12 hours
History 102 and core elective.....	8 hours
Mathematics 111, 131, 132.....	14 hours

Sophomore year

Mathematics 133, 237, 241.....	12 hours
Philosophy 125, 150, 175.....	12 hours
Physics 200, 201	10 hours
Electives	12 hours

Junior year

Language 101, 102, 103 or electives.....	12 hours
Philosophy 225, 250.....	8 hours
Physics 202, 310, 311, 360.....	17 hours
Theology 120	4 hours
Electives	4 hours

Senior year

Physics 330, 331, 332, 375, 470.....	18 hours
Theology 220, 320 and core elective.....	12 hours
Electives	14 hours

Total.....181 hours

- Ph 100 Modern Physical Science** 4 credits
 Twentieth Century principles of physics. Emphasis on the microscopic world of atomic and nuclear phenomena, e.g. the Bohr theory of the atom, the discovery of the nucleus by Rutherford, some of the modern models for the nucleus, and the discovery of the elementary sub-nuclear particles. *Core science option for non-science majors.*
- Ph 105 Mechanics and Sound** 5 credits
 Uniform motion, accelerated motion, rotational motion, energy, statics, harmonic motion, wave motion and sound. One three-hour laboratory per week. Prerequisite: Mt 110 or equivalent.
- Ph 106 Electricity and Magnetism** 5 credits
 Electric charge, magnetism, current and resistance, electric cells, electromagnetism, inductance and capacitance, alternating currents, thermoelectricity and elementary theory of electronics. One three-hour laboratory per week. Prerequisite: Ph 105.
- Ph 107 Heat and Light** 5 credits
 Source and velocity of light, reflection and refraction, dispersion and color, lenses, optical instruments, interference and diffraction, polarized light, mechanics of gases, heat and thermodynamics. One three-hour laboratory per week. Prerequisite: Ph 106.
- Ph 109 Problems in Physics** 3 credits
 Training in methods of attacking, analyzing and solving problems in physics. Deals principally with problems in dynamics, elementary mechanics, statics and graphics. Prerequisite: Mt 110 or equivalent.
- Ph 110 Fundamentals of Astronomy** 4 credits
 An introductory course in astronomy designed to give the student a working knowledge of the tools and methods of modern astronomy and the historical development of the science from the invention of the telescope to the use of satellites. Celestial bodies, constellation, nebulae, are studied in some detail with the help of slide presentations prepared at the world's greatest observatories and with occasional sightings through a reflection telescope. *Core science option for non-science majors.*
- Ph 200 Mechanics and Sound** 5 credits
 Vectors, uniform motion, linear and angular acceleration, force, rotational motion, mechanical energy, statics, harmonic motion, elasticity and momentum, impact, wave motion, and sound. One three-hour laboratory per week. Prerequisites: CE 102 or Ph 109 and Mt 131.
- Ph 201 Electricity and Magnetism** 5 credits
 Electric charge, magnetism, current and resistance, electric cells, electromagnetism, inductance and capacitance, alternating currents, thermoelectricity and thermionics. Prerequisites: Ph 200, Mt 132.
- Ph 202 Light and Modern Physics** 5 credits
 Source and velocity of light, refraction, optical instruments, interference and diffraction, polarized light, radiation, atomic structure, radioactivity, nuclear energy, mechanics of gases and thermodynamics. Prerequisite: Ph 201.
- *Ph 305 General Physics** 6 credits
 A review of general physics for high school teachers but not applicable toward the Master's Degree in Natural Science. One three-hour laboratory and one problem session per week.
- Ph 310 Mechanics (Intermediate Physics) I** 4 credits
Ph 311 Mechanics (Intermediate Physics) II 4 credits
 (I) Statics, equilibrium of systems under the influence of plane forces; kinematics, dynamics, motion of particles and frames of reference in a plane; motion of rigid bodies parallel to a plane; impulse and collision. (II) Scalar and Vector product and moment of vectors; kinematics and dynamics of particles and rigid bodies in space; Lagrange and Hamilton equations, theory of vibrations; special theory of relativity. Prerequisites: Ph 200 (Mt 237 corequisite) for 310; Ph 310 (Mt 241 corequisite) for 311.
- Ph 330 Electricity and Magnetism I** 4 credits
Ph 331 Electricity and Magnetism II 4 credits
 (I) Conductors and dielectrics; d.c. currents; induced emf and magnetic flux properties of capacitors and inductors; a.c. circuit problems; conduction in gases. (II) Electrostatics; electric potential properties of dielectrics and capacitors; electromagnetic effects; Ampere's and Faraday's laws; magnetic properties of matter; ferromagnetism; transformers; electromagnetic waves. One four-hour laboratory per week. Prerequisites: Ph 201, 311 and Mt 241 for 330; 330 for 331.
- Ph 332 Experimental Electronics** 4 credits
 A laboratory course in electronics. Two laboratories per week. Prerequisite: Ph 331.
- Ph 360 Modern Physics I** 4 credits
 Fundamental particles, atoms and nuclei, wave particle experiments, introductory quantum mechanics, atomic structure and spectra. Prerequisites: Ph 202, Mt 241.
- Ph 361 Modern Physics II** 4 credits
 Structure of molecules; binding and energy bands in solids; electrical, thermal and magnetic properties of solids; imperfections in solids; semiconductors; physical electronics; radioactivity and applied nuclear physics. Prerequisite: Ph 360.
- Ph 362 Thermodynamics and Statistical Physics** 5 credits
 Equations of state; first and second laws of thermodynamics; transfer of heat; entropy and thermodynamic functions; kinetic theory of the ideal gas; introduction to statistical mechanics. Prerequisites: Ph 202, Mt 237.
- Ph 375 Nuclear Instrumentation I** 2 credits
Ph 376 Nuclear Instrumentation II 2 credits
 (I) Basic nuclear detection and measurement instrumentation; principles of survey meters, G-M, proportional and scintillation counters and single-channel analyzers; concepts of coincidence correction, shelf-ratios, back scattering errors, instrument efficiency, half-lives of radio-nuclides and statistics. One laboratory per week. (II) Complex instrumentation and techniques. Principles of liquid-scintillation spectrometers, multi-channel analyzers and neutron detectors; energy determination of alpha, beta and gamma rays; beta and gamma ray spectra. Introduction to the nuclear reactor and use in neutron activation. One laboratory per week. Prerequisites: Ph 107 or 202 for 375; 375 for 376.

- *Ph 412 Principles of Mechanics** **6 credits**
Introduction to vector analysis, statics, Newton's laws of motion, work and energy, impulse and momentum, circular motion, moment of inertia, elasticity, harmonic motion. One three-hour laboratory and one problem session per week. Prerequisites: Ph 105 and Mt 132 or equivalent.
- *Ph 422 Principles of Heat and Wave Motion** **5 credits**
Effects of heat, calorimetry, change of state, thermal behavior of gases, laws of thermodynamics, transfer of heat. Free and forced harmonic oscillations, wave motion, sound. One three-hour laboratory and one problem session per week. Prerequisite: Ph 412 or equivalent.
- *Ph 432 Principles of Electricity and Magnetism** **6 credits**
The electric field, direct current circuits, chemical and thermal electromotive force, properties of dielectrics, the magnetic field, the magnetic field of a moving charge, induced electromotive force, inductance, magnetic properties of matter, alternating currents and electromagnetic waves. One three-hour laboratory and one problem session per week. Prerequisites: Ph 106 or equivalent and Ph 412.
- Ph 450 Optics I** **4 credits**
Ph 451 Optics II **4 credits**
(I) Electromagnetic spectrum including microwaves, wave propagation, standing waves, interference waves. One four-hour laboratory per week. (II) Diffraction, electromagnetic theory, absorption, electromagnetic waves, polarization, double refraction, electromagnetic polarization. One four-hour laboratory per week. Prerequisites: Ph 331 for 450; 450 for 451.
- *Ph 452 Principles of Light** **5 credits**
Sources and velocity of light, reflection and refraction of light, dispersion, spectra and color, lenses, optical instruments, interference and diffraction, polarized light, line spectra and thermal radiation. One three-hour laboratory and one problem session per week. Prerequisite: Ph 412 or equivalent.
- Ph 470 Nuclear Physics** **4 credits**
Nuclear structure and models, nuclear forces, nuclear processes, properties of nucleons, mesons, and other unstable elementary products. Prerequisite: Ph 360.
- Ph 475 Subcritical Reactor** **4 credits**
The basic physics and engineering problems involving operation of a reactor. One laboratory per week. Prerequisites: Ph 360, 376 and 470.
- Ph 481 Theoretical Physics** **4 credits**
An introduction to mathematical physics. Transformation theory, matrix and tensor analysis, orthogonal functions, boundary value problems, field theory and the use of Green's function, and relativity. Prerequisites: Ph 311, Mt 241.
- Ph 485 Quantum Mechanics I** **4 credits**
An introduction to quantum mechanics. The state function, the Uncertainty Principle, the Schrödinger equation, the square well and one dimensional solutions, wave packets, semi-classical approx-

imation methods, and motion in three dimensions. Prerequisite: Ph 481.

- Ph 486 Quantum Mechanics II** **4 credits**
The Born approximation, time dependent perturbation theory, angular momentum and spin, potential scattering, and the Dirac equation. Prerequisite: Ph 485.
- Ph 491 Special Topics in Physics** **2-4 credits**
Ph 492 Special Topics in Physics **2-4 credits**
Ph 493 Special Topics in Physics **2-4 credits**
Ph 497 Research Project **2 credits**
Ph 498 Research Project **2 credits**
Ph 499 Research Project **2 credits**

Graduate Courses

- *Ph 533 Electronics: Theory and Practice** **5 credits**
Electronic principles, basic circuits and components, servo systems, operational amplifiers, feedback control, digital circuits. Two laboratories per week. Prerequisite: Ph 432.
- *Ph 562 Principles of Modern Physics** **5 credits**
The electron, emission of electrons, relativity, atomic spectra and atomic structure, quantum mechanics, x-rays, molecular structure and molecular spectra, low-temperature phenomena. Prerequisites: Ph 412 and 432 or equivalent.
- *Ph 563 Principles of Nuclear Physics** **4 credits**
Basic nuclear concepts, radioactive decay, alpha emission, beta decay, gamma radiation, nuclear masses, nuclear structure, nuclear reactions, nuclear fissions, cosmic rays and subnuclear particles. Prerequisite: Ph 562.
- *Ph 572 Principles of Nuclear Instrumentation I** **2 credits**
- *Ph 573 Principles of Nuclear Instrumentation II** **2 credits**
(I) Basic nuclear detection and measurement instrumentation; principles of survey meters; G-M, proportional and scintillation counters and single-channel analyzers; concepts of coincidence correction, shelf-ratios, back scattering errors, instrument efficiency, half-lives of radio-nuclides and statistics. Two laboratories per week. (II) Complex instrumentation and techniques. Principles of liquid-scintillation spectrometers, multi-channel analyzers and neutron detectors; energy determination of alpha, beta and gamma rays; beta and gamma ray spectra. Introduction to the nuclear reactor and use in neutron activation. Two laboratories per week. Prerequisites: Ph 200, 201 and 202 or equivalent series for 572; 572 for 573.
- *Ph 574 The Subcritical Reactor** **3 credits**
Acquaints the student with the basic physics and engineering problems of reactor operation. One laboratory per week. Prerequisites: Ph 563 and 573.

*Offered summer only for high school teachers in the master's degree program in natural science.

Political Science

Ben Cashman, Ph.D., *Chairman*

Objectives

The curriculum in political science introduces the student to political values, trains him in political analysis, lays the intellectual foundation for citizenship and informs him of government processes at the international, federal, state and local level. It prepares students for graduate study or for careers in government, research, teaching, or private enterprise where a knowledge of political science is required.

Degree Offered

Bachelor of Arts

General Program Requirements

Students in political science must satisfy the core curriculum requirements of the University given on page 24 of this bulletin and those for the College of Arts and Sciences on page 32. Required sequences are 12 hours of social science, 12 hours of science or 8 hours of mathematics and 12 hours of modern language or fine arts.

Departmental Requirements

BACHELOR OF ARTS—48 hours of political science which must include Pls 160, 200, 214, 218, 250, 349, 353, 385, and 8 hours of electives chosen from Pls 224, 251, 252 or 253 (American sequence) and 8 hours of electives chosen from Pls 342, 351, 352, 355 (political theory sequence). History, economics or sociology are recommended as related fields.

- Pls 160 American National Government 4 credits**
A study of the structure, general functions and interrelations of the executive, legislative and judicial branches of the national government.
- Pls 200 Comparative Parliamentary Democracies 4 credits**
An analysis of selected foreign democratic systems. Emphasis upon constitutional and ideological principles, governmental forms, practices and problems. Prerequisite: Pls 160.
- Pls 214 Government and the Public Welfare 4 credits**
This course concentrates upon the functions rather than the structure or processes of American government. Special emphasis is placed upon relations between government and business, labor and agriculture. Prerequisite: Pls 160.
- Pls 218 U. S. Constitution 4 credits**
The development of this unique document; the philosophy it embodies and its meaning today through a study of precedents and ruling cases. Prerequisite: Pls 160.
- Pls 224 Political Parties and Interest Groups 4 credits**
Study of dynamic relationships among groups in the American political process; special emphasis on role, organization, strategy and leadership of American political parties. Prerequisite: Pls 160.

UNDERGRADUATE MINOR—24 hours which must include Pls 160, 200, 214, 218, 349 and 353.

Bachelor of Arts

Freshman year

English 100, 160 and core elective 12 hours
History 101, 102 and core elective 12 hours
Philosophy 125, 150, 175 12 hours
Political Science 160, 200, 214 12 hours

Sophomore year

English core elective 4 hours
Philosophy 225, 250 8 hours
Political Science 218 and electives 12 hours
Science or mathematics and elective 12 hours
Social Science 8 hours
Theology 120 4 hours

Junior year

Language or Fine Arts 12 hours
Electives 12 hours
Political Science 250, 349, 385 12 hours
Theology 220, 320 and core elective 12 hours

Senior year

Political Science 353 and electives 16 hours
Social Science 4 hours
Electives 16 hours

Total 180 hours

Political Science Courses

- Pls 250 Public Administration 4 credits**
An analysis of governmental administration; the bureaucratic state; the role of the administrator; organizational theory; personnel administration; administration of finances; administrative law. Prerequisite: Pls 160.
- Pls 251 State Government and Politics 4 credits**
An analysis of the unifying principles and the great diversities of the 50 states; emphasis on federal-state intergovernmental relationships. Prerequisite: Pls 160.
- Pls 252 Urban Government and Metropolitan Areas 4 credits**
Study of governmental role in urbanization and metropolitan growth; special emphasis on organization and politics of American cities. Prerequisite: Pls 160.
- Pls 253 The American Presidency 4 credits**
A study of the presidential office and its powers; special treatment of the President's relations with the Congress and with bureaucracy structure. Prerequisite: Pls 160.
- Pls 290 Diplomatic and Consular Practices 4 credits**
An analysis of American foreign policy-making; the constitutional framework; the role of the President, the Congress, the Department of State, the military,

public opinion and pressure groups. Prerequisite: Pls 160.

- Pls 291 United States Foreign Policy** 4 credits
American policy in Western Europe, the Near East, Africa, the Far East, the Western Hemisphere and especially in international organizations. Prerequisite: Pls 160.
- Pls 315 Comparative Totalitarian Political Systems** 4 credits
An analysis of selected major totalitarian systems; emphasis on the environment, party and regime origins, ideological and governmental principles, organs of terror and state control. Prerequisite: Pls 160.
- Pls 340 Comparative African Political Systems** 4 credits
An analysis of selected African systems; emphasis upon the generality and diversity of forms and ideology, as well as problems of nation building. Prerequisite: Pls 214.
- Pls 341 Comparative Asian Political Systems** 4 credits
An analysis of selected Asian systems; emphasis upon the generality and diversity of forms and ideology, as well as problems of nation building. Prerequisite: Pls 214.
- Pls 342 History of American Political Thought** 4 credits
A study of American political traditions; Puritanism, revolutionary thought, federalism, Jeffersonianism, intellectual democracy, slavery, progressivism, modern day pragmatism and social utilitarianism. Prerequisite: Pls 160.
- Pls 349 International Relations** 4 credits
An analysis of the dynamic forces in international relations; power, nationalism, sovereignty, colonialism, imperialism; theories of war and peace. Prerequisite: Pls 314.
- Pls 350 International Law** 4 credits
Fundamentals of international law; states and international law; the individual in international law; creation, application and enforcement of international law. Prerequisite: Pls 349.
- Pls 351 Ancient Political Thought** 4 credits
A critical examination of the political ideas from the pre-Socratics to St. Augustine, with an emphasis on reading the sources. Prerequisite: Pls 160.

- Pls 352 Political Thought of Middle Ages and Renaissance** 4 credits
Writings of the later Fathers, the early, middle and late Scholastic period and the Renaissance to the end of the 16th century. Prerequisite: Pls 160.
- Pls 353 Modern Political Thought** 4 credits
Political ideas from James I through Hobbes, Locke, Montesquieu, Rousseau, the Revolutionary periods, the English Utilitarians, the Socialists of the 19th and 20th centuries. Prerequisite: Pls 160.
- Pls 355 Recent Political Theory** 4 credits
A critical study of the writings from Karl Marx to the present; political ideas and methods employed by these theorists. Prerequisite: Pls 160.
- Pls 385 International Organizations** 4 credits
An introduction to the history, theories and problems of international organizations; the League of Nations and the United Nations. Prerequisite: Pls 349.
- Pls 449 Problems in International Relations** 4 credits
Theories, scope and methods in the study of international relations; assessment of the dynamic international forces and a critical analysis of international political institutions. Prerequisite: Permission of instructor.
- Pls 451 Problems in Political Theory** 4 credits
The nature of civil society, government and law, the common good, the natural law theory and civil rights in the open versus the closed society. Prerequisite: Permission of instructor.
- Pls 460 Problems in American Government** 4 credits
Issues arising from the federal system and the branches of government. Prerequisite: Permission of instructor.
- Pls 491 Investigation of Special Topics** 2-4 credits
Pls 492 Investigation of Special Topics 2-4 credits
Pls 493 Investigation of Special Topics 2-4 credits
Supervised research work. Open to senior political science majors with approval of the chairman of the department.
- Pls 498 Scope and Methods of Political Science** 4 credits
Introduction to the history, methodology and focus of research in political science; behavioral methods. Prerequisite: Permission of instructor.



Pre-professional programs in dentistry and medicine are not fields of concentration; they are career choices. The best preparation for these careers, and the one preferred by professional schools, is a complete four-year undergraduate program leading to a bachelor's degree.

Program

Students planning to enter medical or dental school may undertake a regular degree in any department of the University. These students should indicate to their adviser the specific area of pre-professional interest such as biology-premedical or pre dental, chemistry-premedical or pre dental. If a non-science major is chosen, the dental or medical school requirements in science must

The best preparation and a requirement for entrance to many law schools is the completion of a four-year program for the bachelor's degree. However, some law schools will admit students who have completed three years of undergraduate work if their academic record is above average.

In advising prelaw students, Seattle University follows the recommendations of the Association of American Law Schools. These stress comprehension and expression in words, critical understanding of human institutions and values with which the law deals, and creative power in thinking. These capacities may be developed through study in any of a number of departmental majors.

Objectives

Freshmen and sophomore students who have not yet selected a major field may enroll in the two-year Pre-Major Program. The emphasis in this program is on core curriculum subjects which are required for all degrees. Students are encouraged to explore fields of study in which they have an interest, whether arts, science or professional, and at the same time to complete course requirements basic to every program. A major must be selected by the end of the sophomore year, although Pre-Major status may be terminated at any time by declaring a major field, provided the student is academically in good standing.

Premedical and Pre dental

David H. Read, Ph.D., *Adviser*

still be met. In general these are one or two years of biology, two years of chemistry and one year of physics. Most professional schools also recommend calculus. The recommendation of the Association of American Medical Colleges for electives in the humanities and social and behavioral sciences is more than adequately met by the Seattle University core curriculum.

The medical college and dental college admission tests are given each year to all students who expect to apply to these professional schools. Each student is interviewed by the premedical committee before taking the examination. All applications for admission to medical or dental schools must be approved by the adviser and his committee.

Prelaw

James Maguire, J.D., *Adviser*

Program

Entering students interested in law must declare a major in the field in which they are most interested and for which they are best suited. Those unable to make such a determination upon entrance will be enrolled in the First Humanities Program. The program of study of each prelaw student must be approved by the departmental adviser and the prelaw adviser should be consulted quarterly. During their junior year, students must acquaint themselves with the entrance requirements of the law school they plan to attend and make arrangements to take the law school admissions test. The application form and the instruction booklet for this test may be obtained from the prelaw adviser.

Pre-Major

Mary Margaret Ridge, B.A., *Director*

Pre-Major Program

Freshman year

English 100, 160 and core elective	12 hours
History 101, 102 and core elective	12 hours
Philosophy 125, 150, 175	12 hours
Science or Mathematics and elective, Social Science or Fine Arts	12 hours

Sophomore year

English core elective	4 hours
Major or elective	8 hours
Philosophy 225, 250	8 hours
Science or Mathematics and elective, Social Science or Fine Arts	24 hours
Theology 120	4 hours

Psychology

Thomas W. Cunningham, Ph.D., *Chairman*

Objectives

The curriculum is designed for students who plan to work as professional psychologists and thus need a sound preparation for graduate study; for students who plan a career in any field dealing primarily with people, such as nursing, teaching, social work, guidance and personnel; or for those who desire a well-rounded education and thus need a basic knowledge and understanding of human behavior. The specific and unique role of the Department of Psychology is to provide a solid knowledge of psychology as an empirical science, within the framework of Christian principles.

Degrees Offered

Bachelor of Arts
Bachelor of Science

General Program Requirements

Students in psychology must satisfy the core curriculum requirements of the University as given on page 24 of this bulletin and those of the College of Arts and Sciences on page 32. See programs of study below for additional requirements.

Psychology majors may choose any minor but are advised to take mathematics, biology or sociology. For social work, the recommended curriculum is a major in psychology and a minor in sociology. Premedical students may take a Bachelor of Science in psychology.

All psychology majors must obtain a grade of C or higher in those courses listed below under departmental requirements, and must maintain a 2.0 g.p.a. in all other psychology courses.

All psychology majors are required to take the Graduate Record Examination Advanced Test in psychology at their own expense prior to graduation.

Departmental Requirements

BACHELOR OF ARTS—42 hours of psychology which must include Psy 100, 201, 210 or 315 or 322, 380, 401 and either 302 or 499.

BACHELOR OF SCIENCE—42 hours of psychology which must include Psy 100, 201, 202, 210 or 315 or 322, 330, 401, 402, either 302 or 499, and a minimum of 40 hours of mathematics and physical science.

UNDERGRADUATE MINOR—24 hours of psychology which must include Psy 100.

Bachelor of Arts

Freshman year

English 100, 160 8 hours
History 101, 102 and core elective 12 hours
Philosophy 125, 150, 175 12 hours
Elective 4 hours
Psychology 100, 201 8 hours
Social Science 4 hours

Sophomore year

Biology 101, 270, 271 12 hours
English core electives 8 hours
Philosophy 225, 250 8 hours
Psychology 210, 315 or 322 8 hours
Social Science 4 hours
Theology 120 4 hours
Elective 2 hours

Junior year

Minor or electives 12 hours
Psychology 380, 401 and electives 22 hours
Theology 220, 320 and core elective 12 hours
Social Science 4 hours

Senior year

Language 101, 102, 103 or electives 12 hours
Minor or electives 12 hours
Psychology 302 or 499 4 hours
Electives 8 hours

Total 180 hours

Bachelor of Science

Freshman year

Chemistry 114, 115, 116 12 hours
English 100, 160 8 hours
Mathematics 4 hours
Philosophy 125, 150, 175 12 hours
Psychology 100, 201, 202 10 hours

Sophomore year

Biology 101, 270, 271 12 hours
English core elective 4 hours
Philosophy 225, 250 8 hours
Psychology 210 or 315 or 322 and electives 16 hours
Theology 120 4 hours
Electives 2 hours

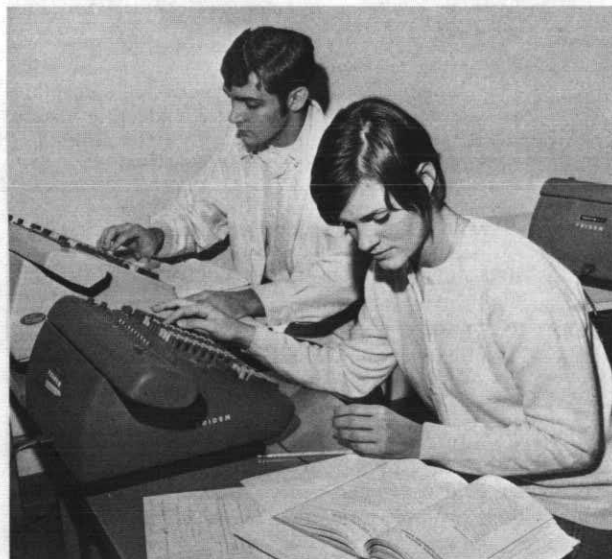
Junior year

Science or mathematics 12 hours
Physics 105, 106 8 hours
Psychology 330, 401, 402 12 hours
Theology 220, 320 and core elective 12 hours
Elective 4 hours

Senior year

History 102 and core elective 8 hours
Language or electives 12 hours
Psychology 302 or 499 4 hours
Social Science 4 hours
Electives 12 hours

Total 180 hours



- Psy 100 Introductory Psychology** 4 credits
A general introduction to the data of scientific psychology, including its nature, scope and method; organic, environmental and personal factors that influence human behavior.
- Psy 201 Statistics I** 4 credits
- Psy 202 Statistics II** 2 credits
(I) Basic principles and methods for compiling and interpreting data statistically; graphs, frequency distribution, sampling, correlation; three lecture and two laboratory hours per week. (II) Analysis of variance, Chi square, regression and correlation and non-parametric statistics. Prerequisite: Psy 201.
- Psy 203 Machine Methods in Statistics** 2 credits
Adaptation of the problems of basic statistics to machine solution. This laboratory course utilizes automatic desk calculators. Three laboratory hours per week. Prerequisite: Psy 201 or equivalent.
- Psy 210 Personality Adjustment** 4 credits
The normal personality; self-knowledge and self-actualization; personality adjustment problems; various inadequate reactions, escape and defense mechanisms; early detection, nature and causes; positive mental health. Prerequisite: Psy 100.
- Psy 301 History and Schools of Psychology** 4 credits
Survey of the history of psychology, including the classic periods of structuralism, functionalism, behaviorism, psychoanalytic schools and Gestalt. Prerequisite: Psy 100.
- Psy 302 Contemporary Theories** 4 credits
Critical examination of the major theories, issues and methodology in psychology since 1935; emphasis on personality, learning and perception. Prerequisite: Psy 301 or permission.
- Psy 315 Abnormal Psychology** 4 credits
A survey of the facts of abnormal mental life; kinds, symptoms, nature and causes of mental disorders; abnormalities of specific functions; theories of etiology. Prerequisite: Psy 100.
- Psy 322 Psychology of Growth and Development** 4 credits
Development from infancy; formative aspects of childhood; puberty; characteristics and special problems of adolescents; emotional maturation. Prerequisite: Psy 100 or equivalent.
- Psy 330 Physiological Psychology** 4 credits
The biological basis of behavior, cerebrospinal, autonomic and sensory systems; endocrine glands, relation of the brain to mental processes. Three lecture and three laboratory hours per week. Prerequisites: Psy 100 and human physiology.
- Psy 380 Measurement in Psychology** 4 credits
Principles of psychological measurement; nature, uses and limitations of psychological testing; reliability, validity. Prerequisite: Psy 201.
- Psy 381 Psychological Tests** 4 credits
A survey of commonly used tests; aim, content, administration, scoring and interpretation. Prerequisite: Psy 380.
- Psy 390 Computer Research Methods** 4 credits
The use of an electronic digital computer in behavioral science research. Laboratory session requires console technique and use of data processing equipment. Three lecture and three laboratory hours per week. Prerequisites: Psy 201, 203 or equivalent.

Psychology Courses

- Psy 401 Experimental Laboratory Psychology I** 4 credits
- Psy 402 Experimental Laboratory Psychology II** 4 credits
(I) Nature and interpretation of experimentation, basic experimental design; psychophysical methods; sensory and perceptual processes. (II) Learning, student experience with animal conditioning. Three lecture and four laboratory hours per week. Prerequisites: Psy 100 and 201 for 401; 401 for 402.
- Psy 409 The Psychology of School Adjustment** 3 credits
Study of non-psychiatric personality dynamics from the mental health viewpoint and with particular reference to school adjustment.
- Psy 427 The Counseling Interview** 4 credits
Basic theory, principles and dynamics of the counselor-client relationship, and the counseling process. Prerequisite: Permission.
- Psy 460 Group Dynamics** 4 credits
Survey of theories and empirical studies of the dynamics of group behavior; emphasis on means of more effective and productive group performance. Prerequisite: Psy 310 or equivalent.
- Psy 490 Symposium on Alcoholism** 2 credits
Psychological, educational, physiological, social, industrial, psychiatric, therapeutic and rehabilitation aspects of the problem of alcoholism. Prerequisite: Junior or senior standing in psychology, sociology, premedicine or nursing, or permission.
- Psy 492 Special Topics in Psychology** 2-4 credits
- Psy 493 Special Topics in Psychology** 2-4 credits
- Psy 494 Special Topics in Psychology** 2-4 credits
By arrangement. Prerequisite: Permission.
- Psy 496 Individual Research** 2-4 credits
- Psy 497 Individual Research** 2-4 credits
- Psy 498 Individual Research** 2-4 credits
By arrangement. Prerequisite: Permission.
- Psy 499 Seminar** 2-4 credits
Prerequisite: Permission.



Sociology

Anita Yourglich, Ph.D., *Chairman*

Objectives

Sociology has the dual capacity of satisfying the need of students for a liberalizing discipline and of providing a sound basis for career preparation. Courses are designed to provide a systematic inquiry into the complex structure and dynamic function of modern society and to inquire into the social product of social living, culture. These courses further investigate the social and cultural influences affecting the development of the human personality.

Students who major in sociology may be broadly classified in three groups: those interested in pursuing sociology as a career for teaching or for research; those interested in pursuing sociology as a preparation for a career in social work; and those interested in sociology for its liberalizing character, for its value in "humane learning." Three programs terminating in the Bachelor of Arts degree are offered. Common to these is a series of required courses whose purpose is to give a proper grounding in the conceptual tools of analysis and to equip the student to appreciate the techniques by which an empirical body of knowledge is established.

Degree Offered

Bachelor of Arts

General Program Requirements

Students in sociology must satisfy the core curriculum requirements of the University as given on page 24 of this bulletin and those of the College of Arts and Sciences on page 32. Required sequences are 12 hours of science, 8 hours of mathematics, 12 hours of modern language and 12 hours of fine arts. A minor in economics, English, history, philosophy, political science or psychology is also required.

Departmental Requirements

BACHELOR OF ARTS—26 hours of basic courses which must include Sc 101, 102, 200, 201, 202, 380, 381 and the following:

Pre-professional program for sociologists—Sc 494, 497 and 26 hours of upper division sociology courses (students in this program may not take Sc 375, 376, 377).

Sc 101 Fundamentals of Sociology I 4 credits
Examination of the nature of science as it applies to human social relations; analysis of the patterns of human relations in the formation of groups, the development of culture and the impact of these in the formation of the human person; investigation of the ways in which interaction patterns emerge, become normative and result in integrated social structures.

Pre-professional program for social workers—Sc 375, 376, 377 and 12 hours of upper division sociology courses with Sc 260 and 262 recommended.

Liberal arts sociology majors—24 hours of upper division sociology courses with approval of an adviser (students in this program may not take Sc 375, 376, 377).

Majors in all three programs will be required to take written and oral comprehensive examinations (Sc 496, no credit) in the field of their concentration within sociology. The student must register for the examination in the quarter in which he plans to take it.

UNDERGRADUATE MINOR—28 hours, which will include Sc 101, 102, Psy 201, Sc 380, plus 12 hours of upper division courses.

Bachelor of Arts

Freshman year

English 100, 160 and core elective 12 hours
Philosophy 125, 150, 175 12 hours
Psychology 100 4 hours
Sociology 101, 102, 200, 201, 202 18 hours

Sophomore year

English core elective 4 hours
History 101, 102 and core elective 12 hours
Mathematics 170, 171 8 hours
Philosophy 225, 250 8 hours
Sociology 380, 381 and elective 12 hours
Theology 120 4 hours

Junior year

Minor 12 hours
Science 12 hours
Sociology electives 12 hours
Theology 220, 320 and core elective 12 hours

Senior year

Fine Arts 12 hours
Language 12 hours
Minor 4 hours
Sociology 496 and electives 8 hours
Elective 2 hours

Total 180 hours

Sociology Courses

Sc 102 Fundamentals of Sociology II 4 credits
Analysis of demographic and ecological principles as a basis for consideration of the several major institutional structures in human society such as religious, economic, educational, political and familial; social change and deviant behavior. Prerequisite: Sc 101.

- Sc 200 Perspectives in Social Psychology 4 credits**
Consideration of theories and methods in contemporary approaches attempting explanation of the behavior of individuals in social situations. Prerequisites: Sc 102, Psy 100.
- Sc 201 Statistics I 4 credits**
- Sc 202 Statistics II 2 credits**
(I) Basic principles and methods for compiling and interpreting data statistically; graphs, frequency distributions, correlation. (II) Analysis of variance, Chi square, regression and correlation and non-parametric statistics. Prerequisite: Sc 201.
- Sc 256 Criminology 4 credits**
Theoretical overview of the conceptualizations of human behavior as criminal behavior and sociological analysis of criminal interactions, their systemic structures and functions. Prerequisite: Upper division standing.
- Sc 257 Juvenile Delinquency 4 credits**
Analysis of deviations and delinquencies of juveniles as distinct from those of adult offenders and sociological explanations of these behaviors within contemporary conceptual models. Prerequisite: Upper division standing.
- Sc 258 Correctional Theory and Practice 4 credits**
Theoretical discussion of correction as it is relevant to criminal behaviors and review of correctional treatments, institutions and programs. Prerequisites: Upper division standing and Sc 256 or 257.
- Sc 260 Sociology of Family 4 credits**
Explanation of family as a social system with structure and function; differential analysis of the family system as a group and as an institution; utilization of modern sociological frames of reference to interpret the position of the American family in an era of change. Prerequisite: Upper division standing.
- Sc 262 Socialization 4 credits**
Sociological analysis of the process by which one is inducted into his socio-cultural system and a review of the effectiveness of the process in American society. Prerequisite: Upper division standing.
- Sc 266 Interracial and Inter-Ethnic Relations 4 credits**
Concept of race and ethnic group; analysis of the factors in interracial and interethnic tensions; examination of the programs advocated for reducing tension and producing solidarity. Prerequisite: Upper division standing.
- Sc 280 The Urban Community 4 credits**
A study of urban community structures and institutions; historic city types; the process of urbanization; world cities; aspects of American urban communities. Prerequisite: Upper division standing.
- Sc 302 The Black People's Social Movement 4 credits**
Theory of social movements applied to the Black People's struggle for equality in America. Types of movements, stages of development, style of leadership in each. The aim is to understand the unfolding of a specific social movement and to test certain derivative hypotheses with regard to it.
- Sc 340 Advanced Social Psychology 4 credits**
Analytical explorations with specific socio-psychological conceptual models and tests of propositions derived from these models. Prerequisite: Upper division standing.
- Sc 363 Population 4 credits**
Analysis of population trends, problems and policies. Prerequisite: Upper division standing.
- Sc 375 Introduction to Social Work 4 credits**
The historical development, structure and function of social welfare services and institutions with emphasis upon the philosophy and methods utilized by professional social work in meeting human needs. Prerequisite: Upper division standing.
- Sc 376 Factors of Interviewing 4 credits**
The interview as one of the major methods of helping people; study of factors of knowledge and method in proficient interviewing to provide a basis for future development. Prerequisite: Sc 375 or permission.
- Sc 377 Supervised Field Experience 4 credits**
Direct observation and academic study in a selected social welfare agency with stress placed upon the agency's clientele, its services and its function in the community. Prerequisites: Sc 375 and 376.
- Sc 380 Methods of Sociological Research I 4 credits**
Logical structure and general procedure of science; analysis of specific techniques of data-gathering applied in sociology; observation, questionnaire, interview and case-study; problems of measurement, including qualitative and quantitative techniques such as scaling; problem of data-analysis, including tests of hypotheses through statistical techniques. Prerequisites: Upper division standing, Psy 201 and 202.
- Sc 381 Methods of Sociological Research II 4 credits**
Application of methods learned in Sc 380 to the design and execution of a research project by the student. Prerequisite: Sc 380.
- Sc 400 Sociology of Religion 4 credits**
Investigation of the religious institutions in society in terms of their structure, function and change. Prerequisite: Upper division standing.
- Sc 410 Social Stratification 4 credits**
A study of social differentiation with emphasis upon institutionalized aspects of power, privilege and prestige. Generalizations drawn from available studies of status, rank, mobility and social classes. Prerequisite: Upper division standing.
- Sc 420 Mass Communication 4 credits**
Consideration of message-formation and message-dissemination on the societal level with reference to social structures, social power and social change. Prerequisite: Upper division standing.
- Sc 430 Social Change 4 credits**
Critical review of attempts to explain transitions within a specific social system and large scale transitions from one societal form to another; discussion of concepts which may relate the two types of change in one general theory of social change. Prerequisite: Upper division standing.
- Sc 457 Institute or Workshop 4 credits**
Special topics of current relevance in the nation or local community treated from a sociological perspective as a community service. Prerequisite: Upper division standing.

- Sc 467 Educational Sociology** 4 credits
Sociological analysis of education as a social process expedited through specific educative agencies and media which vary across cultures. Prerequisite: Upper division standing.
- Sc 480 Special Topics in Sociology** 1-4 credits
Sc 481 Special Topics in Sociology 1-4 credits
Sc 482 Special Topics in Sociology 1-4 credits
Prerequisite: Upper division standing.
- Sc 491 Sociology of Work** 4 credits
A study of the industrial enterprise as a social system and the social-psychological aspects of the individual's position in the industrial organization. Prerequisite: Upper division standing.
- Sc 494 History of Sociological Thought** 4 credits
An historical survey and evaluation of selected leading figures in the rise and development of sociology

as an independent discipline. Sociological thought is traced from Comte, through the social Darwinists and the analytical sociologists of Europe, to major contemporary thinkers. Prerequisite: Upper division standing.

- Sc 496 Comprehensive Examination** No credits
Each graduating senior will be required to pass a written and oral examination in the quarter in which he qualifies for graduation.
- Sc 497 Individual Research** 2-4 credits
Sc 498 Directed Reading in Sociology I 1-4 credits
Sc 499 Directed Reading in Sociology II 1-4 credits
Sociological reading at advanced undergraduate level. Prerequisite: Upper division standing.

Theology

William F. LeRoux, S.J., S.T.D., *Chairman*

theology

Objectives

Theology has the same fundamental purpose as the other disciplines in the University: intellectual training, the formation of a mature intellect. Within this general framework the department serves a two-fold purpose. It provides the theology sequence of the core curriculum and it offers a program of courses leading to a Bachelor of Arts degree in theology.

University Theology Requirements

Catholic students are required to complete 16 hours of theology as outlined in the core curriculum. Students who are not Catholic are required to complete one 4-credit course, Th 110, Sources of Judaeo-Christian Tradition and Culture or Th 120, Judaeo-Christian Origins.

Catholic students transferring to Seattle University must complete the following theology requirements after transferring into Seattle University:*

Transfer students with senior standing (135 or more credits): 1 course..... 4 credits
Transfer students with junior standing (90 to 134 credits): 2 courses..... 8 credits
Transfer students with sophomore standing (44 to 89 credits): 3 courses.....12 credits
Transfer students with freshman standing (less than 44 credits): 4 courses.....16 credits

The specific courses required in each case shall be determined by consultation with the chairman of the Theology department.

Non-Catholic students are required to take one course in theology, which requirement can be fulfilled by transfer credit at the discretion of the department chairman.

*An exception to these requirements will be made in the case of transfer students who have successfully completed theology courses in their previous institution(s) when such courses plus the above requirements would exceed four major courses in theology.

Degrees Offered

Bachelor of Arts
Master of Religious Education

General Program Requirements

Students in theology must satisfy the core curriculum requirements of the University as given on page 24 of this bulletin and those of the College of Arts and Sciences on page 32. Required sequences are 12 hours of social science, 12 hours of science or 8 hours of mathematics and 12 hours of French or German.

Departmental Requirements

BACHELOR OF ARTS—48 hours of theology which must include Th 120, 220, 320, and 420, and 355, 356, 357, 358 plus 16 hours of theology selected from courses numbered 300-499; 12 hours of either Latin or Greek and 12 hours of modern language are also required. Recommended minors are history, languages, philosophy, psychology or sociology.

UNDERGRADUATE MINOR—36 hours of theology which must include Th 120, 220, 320 and 420, 355, 356, 357 and two theology courses selected from courses numbered from 300 to 499.

MASTER OF RELIGIOUS EDUCATION—For admission, a bachelor of arts degree or equivalent, 20 quarter hours of theology, gpa of 3.0 for regular standing, 2.80 for probation; no transfer credits accepted; all core subjects are required; students must live on campus; 40 hours of course work completed over three eight-week summer sessions with adequate graduate achievement; no language requirement, but a research practicum thesis and a final comprehensive examination will be required.

Freshman year

English 100, 160 and core elective	12 hours
History 101, 102 and core elective	12 hours
Philosophy 125, 150, 175	12 hours
Social Science	8 hours
Theology 120	4 hours

Sophomore year

English core elective	4 hours
Latin or Greek 101, 102, 103	12 hours
Philosophy 225, 250	8 hours
Science or mathematics and elective	12 hours
Theology 220, 320, 420	12 hours

Junior year

Minor or electives	12 hours
French or German 101, 102, 103	12 hours
Social Science	4 hours
Theology 355, 356, 357, 358 and elective	20 hours

Senior year

Fine Arts or electives	12 hours
Minor or electives	8 hours
Theology electives	16 hours

Total.....180 hours

Theology Courses

- Th 110 Sources of Judaeo-Christian Tradition and Culture** 4 credits
A study of the main books of the Old Testament and the Gospels for students who are not Catholic. Historical background, literary analysis and cultural appreciation.
- Th 120 Judaeo-Christian Origins** 4 credits
The historical, literary and theological study of the principal books of the Old Testament and the four gospels.
- Th 220 Ancient Christian Writers** 4 credits
The Acts; Epistles of St. Paul; Epistles of St. James; St. Jude, St. Peter, St. John; The Apocalypse. Prerequisite: Th 120.
- Th 284 Kerygma and Catechesis: Synthesis** 4 credits
Dogmatic and scriptural foundations for catechists. Study of the dogmatic foundation for the teaching of the Apostles Creed and the Sacraments; cases and problems relating to the commandments of God and the Church. Elective only.
- Th 320 Christian Wisdom** 4 credits
The meaning of faith; historical and dogmatic study of the Trinity, the elevation and fall of man, the Incarnation, Redemption, the divine life of Grace; place and function of Mary in the Redemptive plan. Prerequisite: Th 220.
- Th 355 Early Christian Theology** 4 credits
Seminar: A study of the development of doctrine in the early Greek and Latin Fathers of the Church. The Apostolic Fathers, the Didache, St. Justin, St. Irenaeus, Tertullian, St. Cyprian, St. Athanasius, Origen, St. Basil, St. Gregory Nazianzen, St. Gregory of Nyssa. Prerequisite: Th 220.
- Th 356 Christian Writers of the Fourth Century** 4 credits
Seminar: a study of the development of Christian doctrine in the writings of St. Cyril of Alexandria, St. Leo the Great, St. Vincent of Lerins, St. Ambrose, St. Augustine, Boethius. Prerequisite: Th 355.
- Th 357 Scholastic Theology** 4 credits
Seminar: the origin and main lines of scholastic theology; its spirit and aim formulated by St. Anselm, Abelard, St. Bernard, Alexander of Hales, St. Albert, St. Bonaventure, Duns Scotus, William of Ockham, St. Thomas Aquinas. Prerequisite: Th 356.

- Th 358 Reformation Theology** 4 credits
The theological disputes of the Reformation on justification by faith alone; total depravity, irresistible grace; controversies among Catholics, Lutherans, Calvinists and Jansenists; the Enlightenment and Vatican Council I. Prerequisite: Th 357.
- Th 359 Contemporary Theology and Ecumenism** 4 credits
Vatican Council II and modern theologians such as Suenens, Schillebeeck, Rahner, Danielou, Kung, Congar, Bea and Murray. Prerequisite: Th 358.
- Th 391 Church History I** 4 credits
(Hs 324) Topics in early Church history from the birth of Christ to the fall of the Roman Empire. Prerequisites: Th 120, 220, Hs 101.
- Th 392 Church History II** 4 credits
(Hs 325) Topics in Church history from the early Middle Ages through the decline of the medieval synthesis. Prerequisites: Th 120, 220, Hs 101, 102.
- Th 393 Church History III** 4 credits
(Hs 326) Topics in Church history from the Protestant Reformation through Vatican II. Prerequisites: Th 120, 220, 320, Hs 102, 103.
- Th 420 Sacramental Life** 4 credits
Doctrinal, moral and liturgical aspects of Baptism, Confirmation, the Eucharist (both as sacrifice and sacrament), Marriage, Penance, Extreme Unction, the Four Last Things. Prerequisite: Th 320.
- Th 433 Theology of Marriage (men)** 4 credits
Th 434 Theology of Marriage (women) 4 credits
History of the Sacrament of Marriage, its theology and liturgy; application and implementation of this sacramental reality in modern society. Christian ideas and ideals on courtship and marriage. Prerequisite: Th 320 or permission of department chairman.
- Th 435 Liturgical Theology** 4 credits
Theological foundations for public worship and the implementation of liturgical documents for the modern Church. Prerequisite: Th 320.
- Th 440 The Theology of John Henry Newman** 4 credits
A study of Cardinal Newman's theological thought, especially his *Essay on the Development of Christian Doctrine*. Prerequisite: Th 320.
- Th 443 Teachings of Vatican II** 4 credits
A study of the Constitutions, Decrees and Declarations of Vatican II as a framework for Christian life in the modern world. Prerequisite: Th 320.

- Th 444 Theology of the Church** 4 credits
The mission of the contemporary Church with emphasis on the role of the laity. Prerequisite: Th 220.
- Th 474 Ascetical and Mystical Theology** 4 credits
A study of Christian perfection, its nature and obligations; the general and particular means of striving for Christian perfection; the three ways: purgative, illuminative and unitive. Prerequisite: Th 320.
- Th 475 Contemporary Moral Problems** 4 credits
New Testament moral values, their contemporary adaptation; and the conservation and erosion of these values in the secular milieu. Prerequisite: Th 320.
- Th 476 Christian Social Teaching** 4 credits
A review and comparative study of policy statements on major social issues of the twentieth century by Church leaders of various Christian traditions.
- Th 478 Survey of Jewish History** 4 credits
A general survey of Jewish history up to the contemporary period with special emphasis on the Second Commonwealth and Talmudic Period.
- Th 479 Survey of Jewish Theology** 4 credits
A study of monotheism versus paganism, sacrifice, reward and punishment, sabbath and holidays, dietary laws, morals and ethics, traced from the biblical period through the Talmudic period to the present.
- Th 480 Seminar on Contemporary Judaeo-Christian Thought** 4 credits
Discussion and research on major contemporary issues which reflect the basic agreements and disagreements of the Judaeo and Christian religions and cultures in present-day life.
- Th 481 Psalms and the Community of Israel** 4 credits
Analysis and dating of key Psalms according to literary types; influence of Israelite cultic life upon the composition of the psalms; Psalms as a reflection of the deepening religious life of the Old Testament.
- Th 482 Ancient Near Eastern Religions** 4 credits
Seminar. Study of selected religious texts from ancient Egypt, Mesopotamia and Canaan; their bearing upon the ideas and institutions of ancient Israel.
- Th 484 The Prophets and Wisdom Writings** 4 credits
A study of the major prophets and the twelve minor prophets; examination of the texts and historical circumstances of these prophecies; Book of Job; Ecclesiastes; Wisdom.
- Th 486 Archaeology of Palestine** 4 credits
Background and history of Biblical archaeology; pottery types characteristic of the various archaeological periods from the Chalcolithic to the Byzantine.
- Th 487 Historical Geography of Palestine** 4 credits
General outline of the geography of Palestine; influence of geography on the history and religion of Israel.
- Th 488 The Dead Sea Scrolls** 4 credits
A study of the biblical and non-biblical material of the 1948 Qumran and subsequent discoveries; the Essene community, its history and significance.
- Th 489 Comparative Religion** 4 credits
A study of the major non-Christian religions; their history, beliefs, institutions, worship; comparison with Christianity.

- Th 490 Eastern Christianity** 4 credits
A study of those Christian churches in the East which have a rite other than Latin; their origins, history, doctrine, liturgy and present practice.
- Th 491 Modern Protestant Theology** 4 credits
The theological position, history and trends of the major Protestant denominations; the principal leaders of modern Protestant thought and their tenets, Bultman, Tillich, Neibuhr. Prerequisite: Approval of department chairman.
- Th 492 Special Topics in Scripture** 4 credits
- Th 493 Special Topics in Theology** 4 credits
- Th 494 Readings and Research** 4 credits

Graduate Courses

- Th 500 Communication Workshop and Seminar** 0 credits
Communication groups aim at helping an individual enter more deeply into himself to uncover the obstacles and defenses that keep him from expressing his ideas and himself more deeply and honestly with others. Required core course.
- Th 501 Religious Perspectives in Psychology** 5 credits
Transition and growth in faith from the religion of youth to the religion of maturity; the understanding of faith in this process of growth; the catechetical implications of religious instruction; the natural liturgical response of men in their faith realized; problems associated with the learning, living and transmission of the Christian message.
- Th 505 Sacramental Theology** 3 credits
Explanation of membership in the worshipping community; use of the conceptual model of religious belonging and its application by Christianity past and present; deeper understanding of sacrament from historical perspective as well as the experience of living in a faith community entering into dialogue with God through the sacraments.
- Th 510 Biblical Theology** 3 credits
The evolution of biblical language—the hermeneutical justification for the Christian interpretation of the Old Testament themes; an analysis of God revealing Himself through a Word in communication with men asking for their response in faith.
- Th 511 Modern Trends in Catechetics** 0 credits
Courses in theology, psychology, social sciences are not catechetics as such. Catechetics will deal with the problem of faith communication and education, integrate the summer's courses in the context of catechetics and develop modern trends in the difficult field of religious education. Required core course.
- Th 520 Philosophy of Religion** 5 credits
Religion in essence and manifestation in the religious subject, religious object and their reciprocal operation. The unique contribution of Chardinian concepts in the contemporary world.
- Th 525 Religious Perspectives in Sociology** 3 credits
A systematic inquiry into the complex structure and dynamic function of modern society with emphasis on the religious dimension of culture and its reciprocal relationships.

Th 530 Formation of Gospel Tradition 3 credits
 Analysis and classification of the Gospel materials; the influence of form criticism; the life situation of the literary forms, their application and use in modern catechetics.

Th 540 Christian Self-Image 5 credits
 An analysis of contemporary philosophical systems as the intellectual environment in which the Christian message is translated. The influence of philosophers from Kierkegaard through Marcel with consideration of linguistic analysts such as Van Buren.

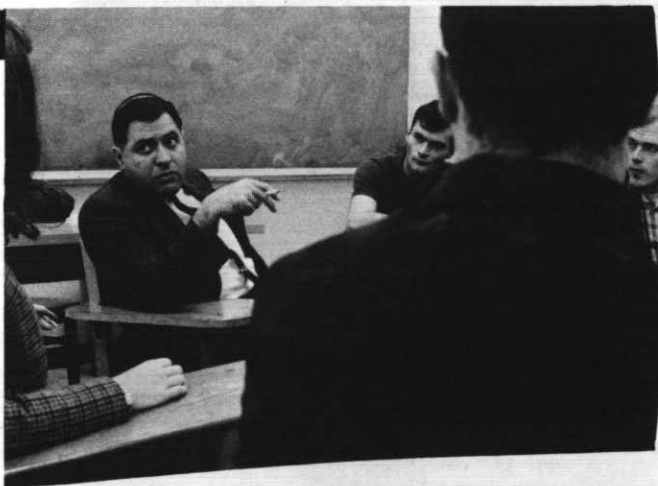
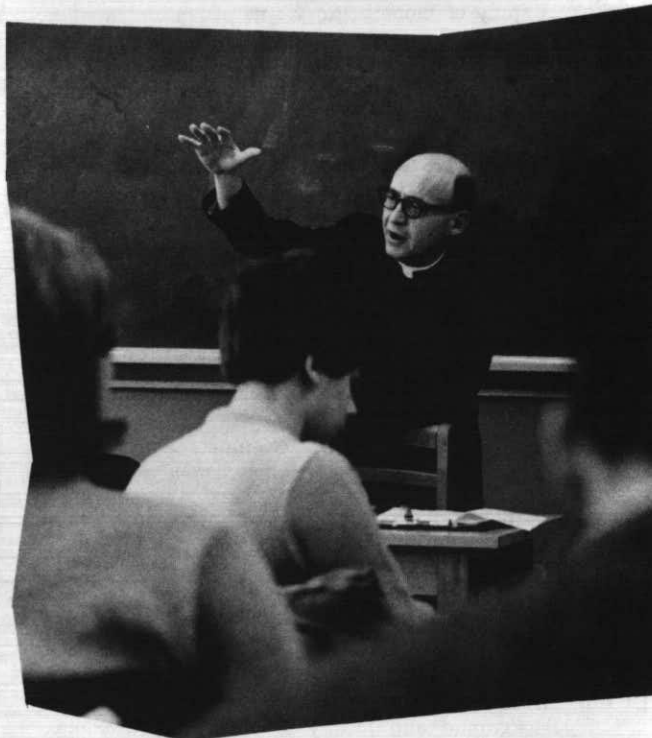
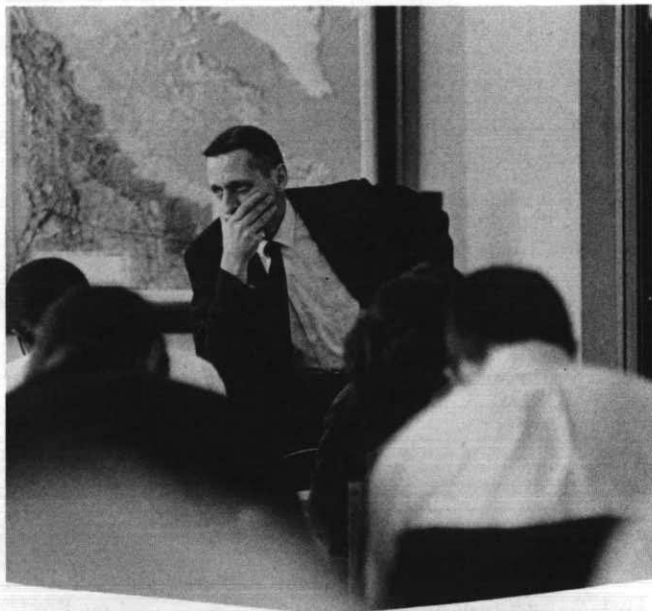
Th 545 The Historical Role of the Christian Community 3 credits
 The Christian community as a theological source, the mission of the Church in the modern world; the ecclesiastical implications of liturgy both in theory and in the development of the catechist—the meaning of teacher as apostle.

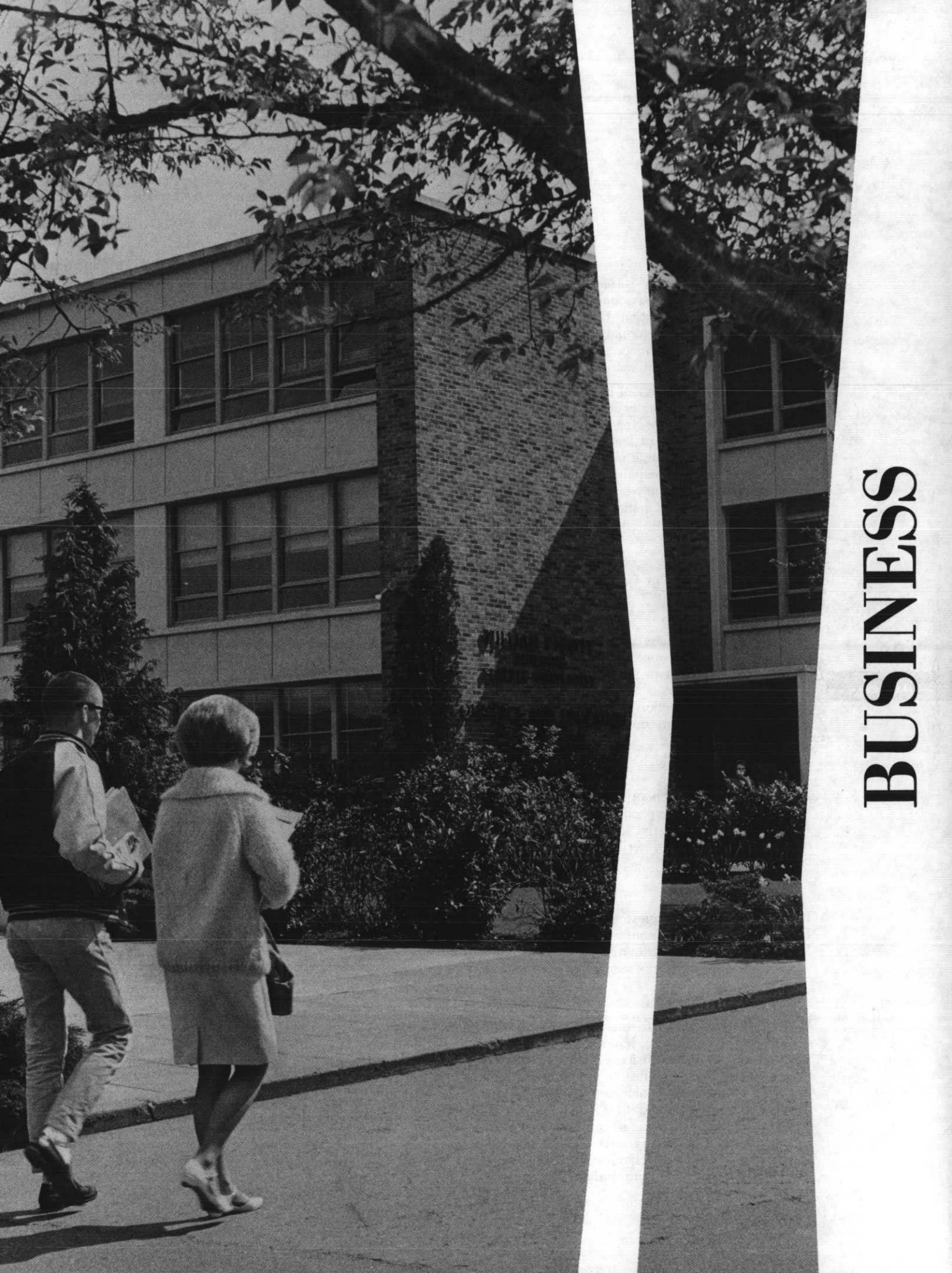
Th 550 Religious Perspectives in Anthropology 3 credits
 An analysis of the development of attitudes both religious and secular—the influence of the milieu both latent and overt, verbal and non-verbal.

Th 560-579 Seminars 2 credits

Th 580-589 Practicum Research Thesis 3 credits

Th 590-599 Special Courses 3-5 credits





BUSINESS

School of Business

Gerald L. Cleveland, D.B.A., *Dean*

Objectives

Collegiate education for business should prepare students for business careers, not simply for job-finding. A broad, liberal education—comparable to university studies in other professional fields—will not replace practical business experience, but will provide a sound base for development of managerial talents.

The programs of the School of Business implement the purpose of the University by providing professional guidance and instruction for developing those qualities which lead to competent leadership and service in the various fields of economic endeavor. The School seeks to prepare graduates capable of assuming responsible roles in the economic development of the Pacific Northwest, as well as national and international sectors, and in both private enterprise and government.

Accreditation

American Association of Collegiate Schools of Business

Organization

The School of Business offers programs in six major fields. These are accounting, economics, finance, general business, management and marketing. The School is formally organized within the University structure but is under the direction of its own dean and is a distinct and independent degree recommending unit responsible directly to the Academic Vice President.

Admission Requirements

Admission to the School of Business is granted to applicants who have specified an interest in business. Applicants must meet the University's requirements for regular admission as described in that section of this bulletin.

Degrees Offered

Bachelor of Arts in Business Administration
Bachelor of Arts in Economics
Master of Business Administration (evening classes only)

Graduate Program

MASTER OF BUSINESS ADMINISTRATION—The degree requires 45 graduate hours beyond the core curriculum in basic business and economics courses. A research paper must be completed in the seminar required in a major area of concentration. The program is designed to accommodate those with baccalaureate degrees in business and other fields, including engineering, arts and sciences and education. Graduate school information appears in another section of this bulletin.

Curriculum

The program of required study includes three primary components: the arts and sciences, the business core and an area of specialization. All students in the school undertake studies which include philosophy, English, history, political science, mathematics, natural science and theology. The business core includes courses in economics, finance, legal environment, accounting, information systems, marketing, statistics and management. Specialization in one of the six major fields is required.

General Program Requirements

With the exception of a modified philosophy requirement, students in the School of Business must satisfy the core curriculum of the University given on page 24 of this bulletin. Required sequences for business students are 12 hours of social science (Ec 271, 272, 273) and 8 hours of mathematics (Mt 111, 131). A minimum of 180 credit hours is required for the bachelors' degrees. The following requirements of the School of Business must also be satisfied.

Business Requirements

BACHELOR OF ARTS IN BUSINESS ADMINISTRATION—All students seeking this degree must complete the following School of Business requirements. (Economics majors see requirements on page 89.)

Freshman and sophomore years—36 hours in business and economics: Bus 170, 210, 211, 230, 231 and 270; Economics 271, 272 and 273.

Junior and senior years—20 specified hours in business and economics: Bus 340, 350, 380 and 482, Ec 372; 20 hours in a major area (accounting, economics, finance, management, marketing) in courses numbered 300-499 at the direction of a major adviser; 12 hours of electives in business outside the major area; 20 hours of electives chosen from any undergraduate offerings of the University, selected with the direction of a major adviser.

Freshman and Sophomore Program

Freshman year	
Business 170	4 hours
English 100, 160 and core elective	12 hours
History 102 and 103 or 231, 251, 281	8 hours
Mathematics 111, 131	8 hours
Philosophy 125, 150	8 hours
Science core elective	4 hours
Sociology 101	4 hours

Sophomore year

Business 210, 211, 230, 231, 270.....	20 hours
Economics 271, 272, 273.....	12 hours
Philosophy 225, 250.....	8 hours
Psychology 100.....	4 hours
Theology 120.....	4 hours

Junior and Senior Program

Junior year

Business 340, 350, 380.....	12 hours
Business major (300-499).....	12 hours
Economics 372.....	4 hours
Theology 220, 320 and core elective.....	12 hours
Electives.....	8 hours

Senior year

Business 482.....	4 hours
Business major (300-499).....	8 hours
Business electives.....	12 hours
Electives.....	12 hours

Total.....180 hours

Accounting

Theodore J. Ross, M.B.A., C.P.A., Adviser

Objectives

The work of the accountant is firmly established as an indispensable service to the world of business. Professionally trained accountants serve in many areas of private business and government, such as cost determination, financial accounting, budgetary planning and auditing. By passing state examinations the accountant may pursue a useful career as a certified public accountant.

Minimum requirements for the accounting major are five courses selected from: Bus 330, 332, 333, 334, 336, 431, 432, 433 or 435. Students who wish to prepare for the certified public accountant examination are advised to complete all of the previously listed courses plus Business 436.

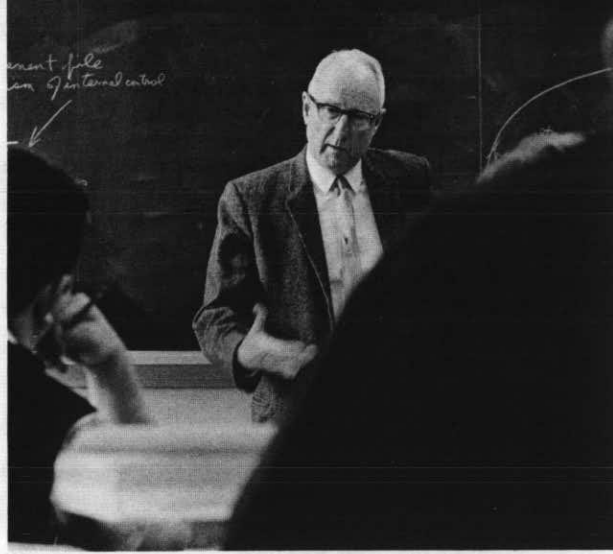
Finance

Khalil Dibee, Ph.D., Adviser

Objectives

The finance curriculum is designed to afford an understanding of the financial functions in business and the management of assets for financial institutions and individuals.

Requirements for the finance major are: Bus 341, 441 and Ec 372 or 473, plus two courses selected from Bus 334, 375, Ec 372, 374 or 473.



General Business

Arthur C. Earl, S.J., M.A., Adviser

Objectives

The general business major provides a broad survey of the entire area of business. It is designed for students who intend to operate their own business enterprise, those who expect to attain greater specialization through on-the-job programs, or those who plan to continue to graduate studies.

General business majors must complete at least five of the following courses: Bus 330, 336, 341, 352, 375, 383, Ec 471, 476.

Management

Donald W. Ireland, M.B.A., J.D., Adviser

Objectives

The general area of management is concerned with the administration of private business or public enterprise. It includes relating the goals of an enterprise with the goals of those individuals and groups of individuals who make the enterprise a continuing process. It provides students with the opportunity of pursuing careers in administration, personnel or industrial relations in business and in government.

Those courses required for a major are: Bus 381 plus four courses selected from Bus 375, 383, Ec 374, 472, 473 or 476.

Marketing

Woodrow R. Clevinger, Ph.D., Adviser

Objectives

Marketing is the study of the flow of goods and services to ultimate consumers and users. Career opportunities in marketing are found in manufacturing, wholesaling and retailing, and in advertising and marketing research.

The requirements for the marketing major are: Bus 352, 353, 451, 452 and Ec 472.

- Bus 170 Economic and Social Environment** 4 credits
A consideration of the significance and effect of economic and social environmental factors on the business sector.
- Bus 210 Introduction to Computer-Based Management Information Systems** 4 credits
Business uses of the computer; familiarization with computer hardware and software systems; instruction in programming; use of "library" programs; consideration of the general problem of the design and implementation of computer-based, management information systems.
- Bus 211 Business Statistics** 4 credits
Basic descriptive and inferential statistics. Calculation of various averages and measures of dispersion; introduction to probability concepts essential to statistical inference; basic statistical decision theory; development of Bayes' theorem. Prerequisites: Mt 111 and 131, Bus 210.
- Bus 230 Principles of Accounting I** 4 credits
Introduction to the entire accounting cycle; accounts and financial statements of a single proprietorship with emphasis on the merchandising business; sales, purchases, deferrals and accruals, notes and interest, receivables and inventories, plant assets and depreciation.
- Bus 231 Principles of Accounting II** 4 credits
Accounting systems and controls, concepts and principles. Partnerships: formation, dissolution, liquidations. Corporations: capital, earnings, dividends. Long term obligations and investments. Survey of cost accounting concepts. Fund statements and discussion of flow of funds from operations. Prerequisite: Bus 230.
- Bus 270 Law and Business** 4 credits
Nature and development of law; structure and functions of the courts; civil and criminal procedure; the jury system; role of attorneys and other legal personnel.
- Bus 330 Cost Accounting** 4 credits
The determination of manufacturing costs under job order, process and joint cost systems, with an introduction to standard costs. Prerequisite: Bus 231.
- Bus 332 Intermediate Accounting I** 4 credits
Financial statements; review of the accounting process; cash and temporary investments; receivables; inventories. Prerequisite: Bus 231.
- Bus 333 Intermediate Accounting II** 4 credits
Current liabilities, investments in stocks and bonds; funds; plant and equipment: acquisition, retirement, depreciation and revaluation; intangibles; long-term debt. Prerequisite: Bus 332.
- Bus 334 Intermediate Accounting III** 4 credits
Stockholders equity, corporation formation; earnings distribution and appropriations; statements from incomplete records; financial statement analysis; funds flow. Prerequisite: Bus 333.
- Bus 336 Federal Tax Accounting I** 4 credits
Federal income tax in relation to individuals; preparation of tax returns; use of tax services and research in tax problems. Prerequisite: Bus 333.
- Bus 340 Corporation and Business Finance** 4 credits
Promotion, organization and financing various forms of business; comparison of corporation with other forms of business organizations; legal and social aspects of corporations. Prerequisite: Bus 231.
- Bus 341 Investment and Security Analysis** 4 credits
Principles, policies and practices of investing. Analysis of industries and securities; individual and institutional viewpoints. Prerequisite: Bus 340.
- Bus 350 Introduction to Marketing** 4 credits
Institutions and essential functions in the marketing system. Analysis of the marketing mix: product, place, promotion and price strategies. Prerequisite: Ec 272.
- Bus 352 Marketing Communication—Advertising** 4 credits
Business firms methods of communications to their markets and publics. Promotion strategies; use of mass media. Prerequisite: Bus 350.
- Bus 353 Price Practices and Policies** 4 credits
Methods of price determination, and administration of price policies by manufacturers, wholesalers and retailers. Legal aspects of pricing under anti-trust laws. Prerequisites: Bus 211, 350.
- Bus 370 Advanced Law and Business** 4 credits
Commercial law, including contracts, business structures and property relationships; legal aspects of government and business, including administrative regulations with emphasis in labor relations. Prerequisite: Bus 270.
- Bus 375 Economics of Profit Sharing** 4 credits
A survey of the philosophy, economics and law in the field of profit sharing; an analysis of the profit sharing plans in use by industry today. Prerequisites: Bus 231, Ec 272.
- Bus 380 Principles of Management** 4 credits
Traditional concepts of management and the changes in management theory and practice which have resulted through quantitative and behavioral research. Prerequisite: Bus 231.
- Bus 381 Organization Theory** 4 credits
The administrative setting and roles of supervisory personnel as determinates of the scope and techniques of management's functions. Prerequisite: Bus 380.
- Bus 383 Personnel Management** 4 credits
Management of human resources to achieve the goals of the firm and the personnel of the firm in light of changes in technology and personal preferences. Prerequisite: Bus 380.
- Bus 431 Advanced Accounting and CPA Problems I** 4 credits
Partnerships: formation, dissolution and liquidation. Joint ventures. Installment sales. Consignment sales. Home office and branch relationships; general procedures and special problems, foreign branches and subsidiaries. Business combinations. Prerequisite: Bus 334.
- Bus 432 Advanced Accounting and CPA Problems II** 4 credits
Consolidations and consolidated financial statements: acquisition of subsidiaries, investments carried at cost and by the equity method. Special

problems in consolidations: change of interest in subsidiaries, indirect and mutual holdings. Preparation of statements of income and of retained earnings. Prerequisite: Bus 334.

Bus 433 Advanced Accounting and CPA Problems III 4 credits

Fiduciary accounting: statements of affairs, receiverships, statements of liquidation and realization; estates and trusts; general procedures, principal and income accounting and financial statements. Governmental units: effect of legal controls upon accounting; classification of accounts; funds, definitions and accounting procedures; special considerations relating to revenues and expenditures. Accounting for non-profit service organizations. Prerequisite: Bus 334.

Bus 435 Auditing 4 credits

Purpose and scope of audits and examinations; principles and procedures of auditing. Practical application through an illustrative audit case. Prerequisite: Bus 334.

Bus 436 Federal Tax Accounting II 3 credits

Federal income tax in relation to partnerships, corporations, estates and trusts. Prerequisite: Bus 336.

Bus 441 Case Problems in Finance 4 credits

Variables relevant to financial problems; skill, techniques and judgment necessary to make financial decisions. Prerequisite: Bus 340.

Bus 451 Marketing Research 4 credits

Purpose, methods and techniques of marketing research. Prerequisites: Bus 211, 352.

Bus 452 Marketing Management 4 credits

Case studies of corporate problems and decision-making within marketing departments. Emphasis on student participation in various roles of marketing; executive action involving organization, planning, execution and control of marketing programs. Prerequisites: Bus 231, 451. Seniors only.

Bus 482 Business Policy and Organization 4 credits

Case studies of formation of policy and the administration of business enterprise; emphasis on the intellectual discipline which permits the understanding of a problem, the planning of a program of action and the progression to execution and constant review. Prerequisite: Senior standing.

Bus 499 Investigation of Special Topics 2-4 credits

Supervised individual research. Open to senior business majors with the approval of the department adviser.

Graduate Courses

Bus 509 Computer-Based Management Information Systems 3 credits

Introduction to computer hardware and software systems, use of "library" programs, time-sharing concepts, simulation applications and study of the design and implementation of computer-based, management information systems.

Bus 510 Descriptive and Analytical Statistics 3 credits

Basic descriptive and inferential statistics. Introduction to probability concepts, statistical estimation, and simple correlation and regression. Prerequisite: Permission of adviser.

Bus 511 Advanced Statistical Analysis 3 credits

Survey of techniques useful in business decision processes. Tests of hypotheses, Chi-square tests, and analysis of variance are covered. Linear programming and game theory. Prerequisite: Bus 510.

Bus 512 Operations Research 3 credits

Operations research techniques useful in business analysis. Queing theory, dynamic and network programming, simulation, inventory and reliability control and advanced Bayesian decision models. Prerequisite: Bus 511.

Bus 519 Seminar in Quantitative Methods 3 credits

Prerequisite: Permission of adviser.

Bus 520 Social Psychology 3 credits

Analysis of socio-psychological theory and research, decision making, group structure and dynamics and leadership, relevant to institutionalized social systems.

Bus 521 Social Communication 3 credits

Analysis of the structure, function, and development of communication in small groups and formal organizations which comprise the social complex. Prerequisite: Bus 520.

Bus 522 Management of Change 3 credits

Analysis of the process of social change in American society and its impacts on formal and informal social organizations. Prerequisite: Bus 521.

Bus 529 Seminar in Behavioral Area 3 credits

Prerequisite: Permission of adviser.

Bus 530 Descriptive Accounting 3 credits

The design and utilization of traditional financial and managerial accounting systems as an integral part of management control and the communication of economic data.

Bus 531 Analytical Accounting 3 credits

Concepts and principles underlying accounting with special attention to income determination and measurement of assets and equities. Analysis of business performance from accounting viewpoints. Prerequisite: Bus 530.

Bus 532 Managerial Control 3 credits

Managerial uses of accounting data; concepts that make modern cost accounting dynamic and vital for decision-making. Prerequisite: Bus 531.

Bus 533 Contemporary Accounting Theory 3 credits

Current accounting issues and problems; uses and limitations of accounting data in the United States and in international business. Prerequisite: Bus 531.

Bus 539 Seminar in Accounting 3 credits

Prerequisite: Permission of adviser.

Bus 541 Corporate Financial Theory 3 credits

Theory and practice of business finance with emphasis on asset management, capital structure, cost of capital and capital budgeting. Prerequisite: Bus 531.

- Bus 542 Investments** 3 credits
Principles and practice of investments; security analysis and evaluation, portfolio management and elements of the investment process. Prerequisite: Bus 541.
- Bus 543 Financial Policy** 3 credits
The course provides the finance student with a second and higher level of reading materials and presents practical situations where the student has to apply theories in policy making. Prerequisite: Bus 541.
- Bus 549 Seminar in Finance** 3 credits
Prerequisite: Permission of adviser.
- Bus 551 Survey of Marketing Principles** 3 credits
A broad view of questions concerning the interrelations of marketing functions including merchandising, channels, pricing and marketing research as applied to various industries and related products.
- Bus 552 Marketing Research** 3 credits
Purpose, methods and techniques of marketing research; description of marketing information systems. Prerequisite: Bus 551.
- Bus 554 International Marketing** 3 credits
The growing importance of international marketing; the differences in economic, cultural and political factors between countries; the feasibility of using American techniques in performing marketing functions abroad. Prerequisite: Bus 551.
- Bus 555 Promotion in Marketing** 3 credits
The role of promotion in marketing; the functions of personal selling, advertising, sales promotion and publicity, and their coordination into an effective promotional mix; evaluation and control of promotion. Prerequisite: Bus 551.
- Bus 556 Pricing** 3 credits
The economic environment of pricing decisions; different approaches to pricing in theory and practice; legal restrictions on pricing. Prerequisite: Bus 551.
- Bus 559 Seminar in Marketing** 3 credits
Prerequisite: Permission of adviser.
- Bus 570 Economic and Social Environment of Business** 3 credits
An interdisciplinary ideas course designed to broaden perspectives on the significant factors that affect business and to study the effect of business on environmental factors.
- Bus 571 Survey of Economic Principles** 3 credits
The laws of demand, supply, returns and costs; price and output determination in different market situations. The implications of the pricing process for the optimum allocation of resources.
- Bus 572 Economic Analysis of the Firm** 3 credits
A systematic development of the theory of the consumer, the firm, the industry and their interaction. Prerequisite: Bus 571.
- Bus 573 Macroeconomic Analysis** 3 credits
Economic basis for political policy under classical, Keynesian and revisionist systems; methods of analysis; equilibrium theories and pragmatic tests; attempts at stabilization under monetary and fiscal policies; the role of competition, oligopoly and American commercial banking. Prerequisite: Bus 571.
- Bus 574 Legal Environment of Business** 3 credits
The nature and development of law; legal institutions and processes; the role of legal personnel and processes in resolving conflicts between business and the environment within which it operates.
- Bus 575 Economic Theory** 3 credits
Application of economic theory and analysis to current domestic and/or foreign economic problems. Prerequisite: Bus 572, 573.
- Bus 579 Seminar in the Environmental Area** 3 credits
Prerequisite: Permission of adviser.
- Bus 580 Principles of Administration** 3 credits
The concepts of business management as influenced by behavioral science and decision-making theories.
- Bus 581 Organization Theory** 3 credits
The influence of the theory and practice of the structure of business organization upon the exercise of the management functions. Prerequisite: Bus 580.
- Bus 582 Decision Theory** 3 credits
The role and effect of different disciplines upon the methodology and rationale of decision-making. Prerequisite: Bus 581.
- Bus 589 Seminar in the General Area** 3 credits
Prerequisite: Permission of adviser.
- Bus 590 Special Topics** 1-3 credits
Prerequisite: Permission of adviser.
- Bus 599 Research** 1-3 credits
Prerequisite: Permission of adviser.



Economics

Margaret Mary Davies, Ph.D., Adviser

Objectives

The courses in economics are designed to acquaint the student with the economy in which he lives and to provide for the application of these courses to all other social sciences. The tools of analysis necessary to solve such problems in income distribution, domestic and international finance, economic fluctuations and business organizations are acquired and opportunity is given to apply the various methods of solution. Students who prove especially able in economics courses are encouraged to pursue graduate work in preparation for professional status as an economist in government, industry or the academic world.

Degree Offered

Bachelor of Arts in Economics

General Program Requirements

With the exception of a modified philosophy requirement, students in economics must satisfy the core curriculum requirements of the University as given on page 24 of this bulletin. In addition, the departmental requirements listed must be satisfied. Students who plan to attend graduate school are urged to take 12 hours of a modern language.

Departmental Requirements

BACHELOR OF ARTS—56 hours; 40 hours of economics courses and 16 hours of business courses, which must include: Ec 271, 272, 273, 371, 372, 374, 471, 472, 473 and 476; and Bus 210, 211, 230, 231, and 8 hours of a laboratory science and 8 hours of mathematics including Mt 131 or its equivalent.

- Ec 271 Principles of Economics I** 4 credits
Organization, operation and control of the American economy in its historical and socio-political setting; problems of inflation, unemployment, taxation, the public debt.
- Ec 272 Principles of Economics II** 4 credits
Operation of the American economy with emphasis on prices, wages, production and distribution of income and wealth; problems of the world economy. Prerequisite: Ec 271.
- Ec 273 American Economic History** 4 credits
Economic growth of the United States in the light of the political and social trends of the times. Stresses the historical background of contemporary economic problems. Prerequisite: Ec 272; Hs 231.
- Ec 371 History of Economic Thought** 4 credits
Major historical developments in economic thought from ancient to contemporary times. Christian influence on economic thought; mercantilism and laissez faire; German and Austrian schools; Marx and the various socialists; Keynes and neo-Keynesian analysis. Prerequisite: Ec 272.

UNDERGRADUATE MINOR—28 hours of economics which must include: Ec 271, 272, 372 and 374; and any three of the following courses: Ec 273, 371, 471, 472, 473 and 476, selected with the assistance of an adviser.

Bachelor of Arts in Economics

Freshman year

Business 210	4 hours
English 100, 160 and core elective	12 hours
History 102, 231	8 hours
Mathematics 111, 131 or equivalents	8 hours
Philosophy 125, 150	8 hours
Political Science 160	4 hours
Psychology 100	4 hours

Sophomore year

Business 211, 230, 231	12 hours
Economics 271, 272, 273	12 hours
Philosophy 225, 250	8 hours
Sociology 101	4 hours
Theology 120	4 hours
Electives	8 hours

Junior year

Economics 371, 372, 374, 471	16 hours
Science core electives	8 hours
Theology 220, 320 and core elective	12 hours
Electives	12 hours

Senior year

Economics 472, 473, 476	12 hours
Language or electives	12 hours
Electives	12 hours

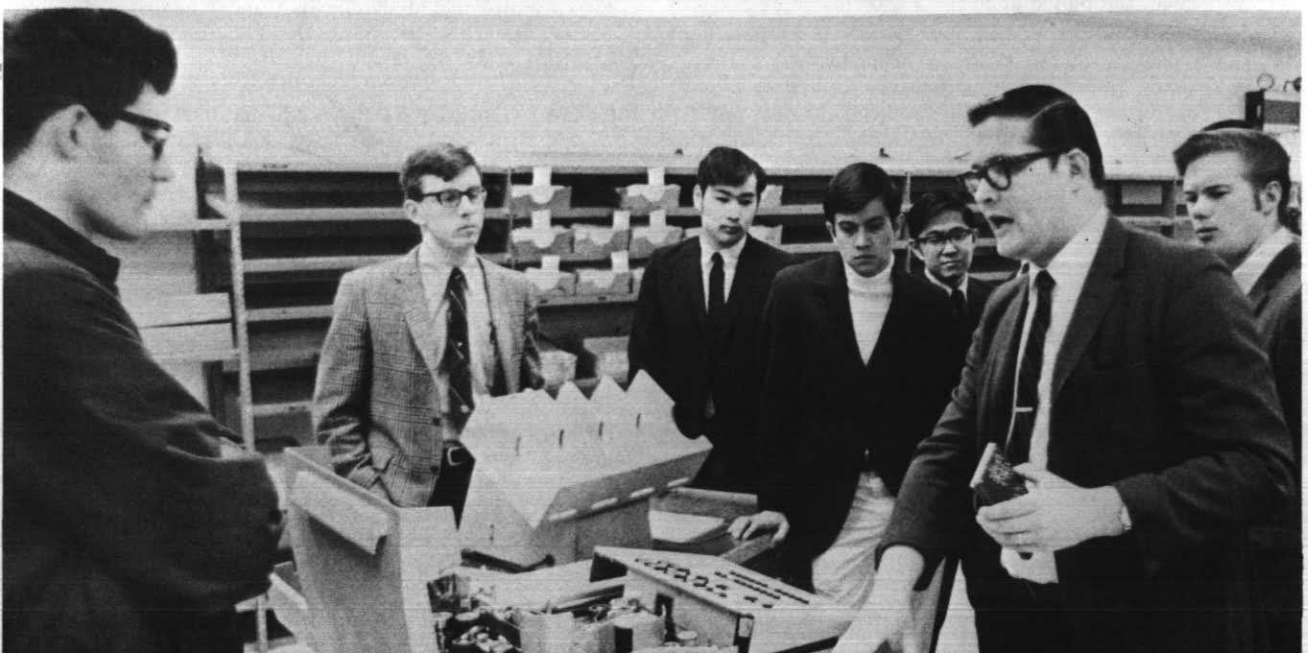
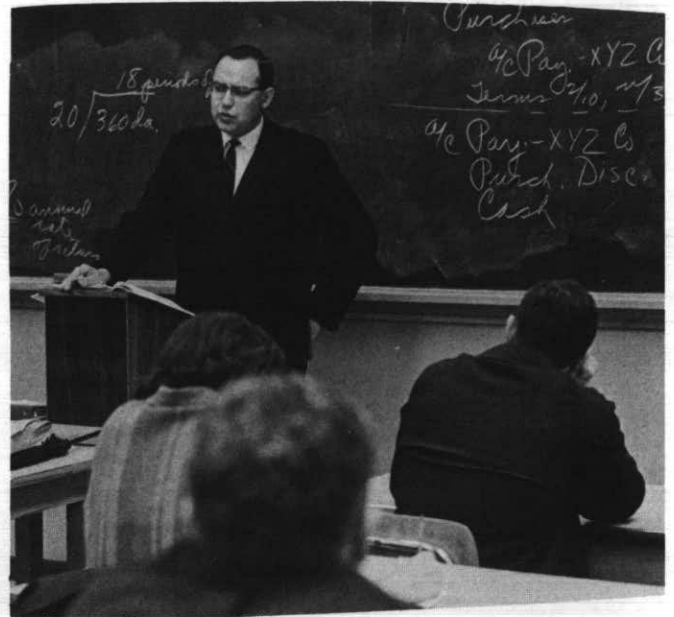
Total 180 hours

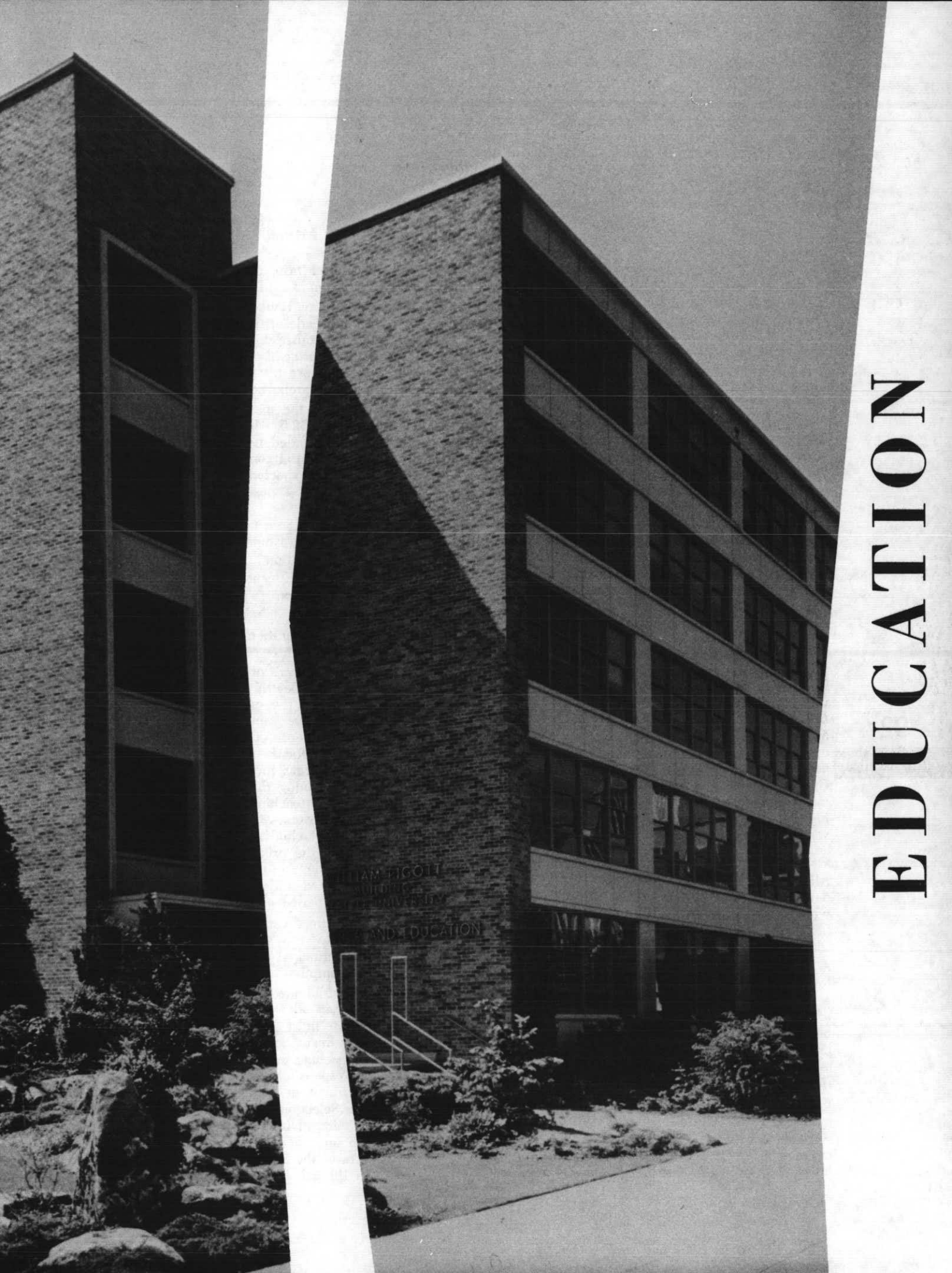
Economics Courses

- Ec 372 Aggregate Economic Analysis** 4 credits
Economic basis for political policy under classical, Keynesian and revisionist systems; methods of analysis; equilibrium theories and pragmatic tests; attempts at stabilization under monetary and fiscal policies; the roles of competition, oligopoly and American commercial banking. Prerequisite: Ec 271; recommended: Ec 272.
- Ec 374 Intermediate Price Theory** 4 credits
Demand, supply, costs, market prices, under competitive and imperfectly competitive market conditions. Relationships between price and costs; income and its functional distribution in a capitalistic society. Prerequisite: Ec 272.
- Ec 471 Government Finance** 4 credits
Revenues, expenditures and debts of federal, state, and local governments; economic theories; constitutional limitations; government finance as means for social reform; shifting and incidence of taxes. Prerequisite: Ec 272; recommended: Ec 372.
- Ec 472 International Economics** 4 credits
Foreign trade theory and practice. Foreign exchange. Tariffs and quotas, G.A.T.T. Common

markets and free trade areas. International Monetary Fund. World Bank. International payments. Gold movements. Liquidity problems. Foreign investment. Developing nations. Prerequisite: Ec 272.

- Ec 473 Business Cycles** 4 credits
Basic variations affecting general business conditions as a background for business and investment decisions, appraisal of proposals for controlling the business cycle and of forecasting techniques. Prerequisite: Ec 272; recommended: Ec 372.
- Ec 476 Labor Economics** 4 credits
Survey of the economics of industrial relations; effects of industrial changes on labor; hours and wages; employment and unemployment; trade unionism and labor legislation. Prerequisite: Ec 272.
- Ec 499 Investigation of Special Topics** 2-4 credits
Supervised individual research. Open to senior economics majors with the approval of the departmental adviser.





WILLIAM BIGGILL
BUILDING
OF UNIVERSITY
AND EDUCATION

EDUCATION

School of Education

Winfield S. Fountain, Ed.D., *Dean*
Ralph K. O'Brien, Ed.D., *Associate Dean*

Objectives

Within the framework of the University's philosophy and principles, the School of Education has as its objectives the attainment of a liberal and humane education, the formation of men and women dedicated to the art of teaching and knowledgeable of its sciences, and a sound preparation in fields or areas of learning applicable to the curriculum of the elementary and secondary school.

The teacher education program at Seattle University develops a breadth and depth of culture and a mastery of the chosen areas of teaching. The educational philosophy of Seattle University is dualistic—the development and harmonious unity of both mind and matter—and Christian—the illumination and elevation of man through revelation.

Accreditation

The School is accredited by the National Council for Accreditation of Teacher Education and approved by the Washington State Board of Education.

Organization

The School of Education has two major divisions, undergraduate studies and graduate studies and one department, Health and Physical Education. The Advisory Committee on Teacher Education, which consists of faculty members from both the College of Arts and Sciences and the School of Education, makes recommendations regarding program changes and reviews new programs prior to consideration by the Academic Council. Close cooperation exists among all departments, schools and colleges of the University in working out a program of preparation for the individual student.

Admission Requirements

All entering freshmen and undergraduate transfer students from accredited institutions of higher learning who aspire to become teachers may be admitted to the School of Education if they meet the University's regular admission standards.

A student in the School of Education will be approved for the certification program of studies upon achieving a 2.5 or higher cumulative grade point average and after acceptance by a faculty selection committee which has been convened to consider the applicant's potential as a teacher. Normally, this committee is convened after the applicant has completed approximately 80 quarter hour credits, or, in the event the applicant had taken this amount of study at another institution, after a full quarter of study at Seattle University.

Applicants with a bachelor's degree earned in other disciplines at Seattle University or at other accredited institutions of higher learning will meet with the fac-

ulty committee prior to being approved for the certification program of studies.

Periodic faculty reviews of the prospective teacher's progress are made at the completion of his foundations of education course, his committee interview, the completion of his principles and technology course, wherein he teaches before his fellow students, and upon completion of his preferred level student teaching.

In addition to the maintenance of a minimum grade point average of 2.5, which demonstrates adequate mastery of the intended teaching subjects and the ability to use the essential communication skills, the prospective teacher is expected to exemplify sound character, personality and a positive commitment to teaching.

Degrees Offered

Bachelor of Arts in Education

Bachelor of Education

Master of Arts in Education

Master of Education

Curriculum

The teacher preparation curriculum at Seattle University encompasses three components:

The liberal core of arts and sciences taken by all students at Seattle University comprises about 45 per cent of the prospective teacher's curriculum. Thirty-five per cent of the program is utilized in gaining a depth of knowledge in a teaching major and minor for the secondary school teacher or two teaching areas for the elementary school teacher. The remaining 20 per cent of the 190 quarter hour basic teaching preparation is received in professional courses in foundations of education, psychology of child and adolescent development and learning, the principles, materials and technology of teaching, and two quarters of closely supervised and assisted student teaching and appropriate laboratory experience in schools throughout the area.

The School offers work leading to the provisional teaching certificate, the standard teaching certificate, the provisional principal's credential and the standard principal's credential.

Each undergraduate and graduate student in education is assigned an adviser with whom he confers at least quarterly. He must also confer periodically with an adviser in his major department. Certification of the mastery of a teaching major taken by a prospective teacher is a joint responsibility of the School of Education and the department in which the student has elected to specialize. Selection of candidates for teacher certification, their advisement, supervision, assistance in placement and follow-up of initial teaching is the responsibility of the School of Education which both observes in the schools and receives reports from them

regarding the effectiveness of existing programs of teacher preparation.

General Program Requirements

Students in the School of Education must satisfy the core curriculum requirements of the University given on page 24 of this bulletin and those of the School outlined below.

BACHELOR OF EDUCATION (elementary teaching)—24 hours in one of the following teaching subjects: art, English, history, modern languages, music; 24 hours in one of these supporting areas: social studies, language arts, science-mathematics, fine and applied arts; at least one course in American literature and United States history are required.

BACHELOR OF EDUCATION (junior high teaching)—28 hours in English and 28 hours in history.

Both programs require professional courses in addition to the core and the above subject area requirements. The provisional (initial) certification program based on the Bachelor of Education requires a minimum of 190 hours, of which 10 hours will be credited toward the mandatory Standard Teaching Certificate requirements.

BACHELOR OF ARTS IN EDUCATION (high or junior high school or middle school or elementary school teaching)—40 hours teaching major beyond the University's core requirements, in any subject that is normally taught as a regular offering in the schools. Since there is a varying demand on the part of schools for each of the several teaching majors students should discuss their choices with their advisers and consult the current Teacher Supply and Demand report available in the School of Education. A course in organization and teaching of the major subject must be included in this major. The provisional (initial) certification program based on the Bachelor of Arts in Education requires a minimum of 190 hours of which 10 hours will be credited toward the mandatory Standard Teaching Certificate requirements.

Graduate Programs

MASTER OF EDUCATION—45 hours with a major in school administration, curriculum development, guidance or adult education administration; either a graduate project or a thesis must be completed; satisfactory completion of a written examination covering the major field is required.

This degree is designed to broaden and deepen the knowledge of experienced teachers. Combined with the Washington State Provisional Principal's Credential, it requires a total of 54 quarter hours beyond the bachelor's degree. The candidate should consult with an adviser as to the level of work for the additional nine hours.

MASTER OF ARTS IN EDUCATION—45 hours with a major in school administration, curriculum development, guidance or adult education administration; a thesis must be completed and a written examination in a modern language may be required; satisfactory completion of a written examination covering the major field is required.

This degree is designed as an intensive preparation which may lead to doctoral graduate study. The Master of Arts in Education, combined with the Washington State Provisional Principal's Credential, requires a total of 54 quarter hours beyond the bachelor's degree. The candidate should consult with an adviser as to the level of work for the additional nine hours.

For either the Master of Education or the Master of Arts in Education, a maximum of 15 credits of supporting studies in 300-499 level courses may be taken from departments outside the School of Education, provided the major for the master's degree has been programmed fully, prior approval has been received from the Graduate Committee and Graduate Council, and the credits are earned at Seattle University or at another accredited institution in agreement with the initial program of studies.

Applicants for graduate degree programs in the School of Education are granted full candidate status after the Committee on Graduate Studies has given approval based on:

1. the cumulative undergraduate grade point average;
2. the recommendation of the authorities where the applicant is assigned;
3. the score received on the Graduate Record Examination;
4. the arrangement with an adviser of a proposed program of studies;
5. the quality of the first 15 quarter credits of graduate work completed at Seattle University (which must include Education 500, 501, 560 or 561) and at least one course in the graduate major.

When full candidate status is accorded, the 20 credits of provisional work will become a part of the total 45 credit graduate degree program.

Senior and junior high school teachers applying for graduate degree programs are expected to have completed previously the equivalent of a major (approximately 40 hours) in a *commonly taught* undergraduate subject.

Elementary school teachers are expected to have completed previously the equivalent of a major in a teaching field such as social studies, language arts, arithmetic and science, fine and applied arts, or any commonly taught subject area.

Candidates for a master's degree in the School of Education must be in residence for at least one full quarter. The remaining work may be taken on less than a full time basis during other academic quarters.

Graduate students and candidates for the Standard Teaching Certificate who are teaching full time should register for only one three-credit course per quarter during the regular academic year and will not be allowed to register for more than one five-credit course or two three-credit courses and then only upon the recommendation of the major adviser.

Special Programs for Certification

Programs may be designed for those already possessing bachelor's degrees who lack certain courses to meet the requirements for teacher certification. Provisions for admission may be found in the Graduate School section of this bulletin.

FIFTH-YEAR NON-DEGREE PROGRAMS—Programs of this type are designed for those planning to meet the requirements for standard teacher certification but who do not desire to work for a master's degree.

TEACHING CERTIFICATES—The School of Education offers various programs which meet the requirements for teaching certificates issued by the Washington State Department of Public Instruction. Consult the School of Education for State regulations regarding the requirements for specific certificates.

A candidate for teacher certification who has completed the requirements for a bachelor's degree in the School of Education must receive recommendations from both the faculty and the chairman of the department in which his teaching major was completed before his name is submitted to the State Department of Public Instruction for a teaching certificate. The provisional certificate is valid for three years and may be renewed once upon completion of 12 quarter hours of the fifth college year and one year of successful teaching.

Candidates who have completed their bachelor degrees at other accredited institutions and who plan to earn their provisional teaching certificates through Seattle University must complete a minimum of 30 quarter hour credits of approved course work at Seattle University.

The standard certificate will be issued upon successful completion of the fifth college year and two years of teaching experience. The fifth year shall include a minimum of 45 quarter hours of which at least 50 per cent are in studies of the third, fourth, and postgraduate years.

Candidates who plan to earn their standard teaching certificate through Seattle University must complete at Seattle University a minimum of 23 of the required 45 quarter hour credits. All work to be applied toward this certificate must conform to the fifth year plan.

Principals' Credentials

Candidates for the provisional principal's credential must receive State of Washington Board of Education approval to enter administrative preparation leading to the credential. (An application form may be obtained from the faculty adviser.) Requirements for the principal's credential include: completion of requirements for a standard teaching certificate; 54 quarter hours of course work beyond the bachelor's degree, of which at least 24 quarter hours are to be in an approved program, including administrative internship; and at least three years of successful teaching at the time the credential is requested. At least one year of successful teaching must have been completed at the time the candidate begins the credential program. Acceptance in Graduate School as a credential candidate is a prerequisite.

Candidates for the standard principal's credential must have the provisional principal's credential, have completed 12 quarter hours of applicable study since receiving the provisional credential, have a master's degree and have completed three successful years as a

school principal. For detailed programs and instructions consult the School of Education.

Bachelor of Arts in Education Secondary

Freshman year

English 100, 160, 180 or 190	12 hours
History 102 and 231	8 hours
Major or teaching areas or electives	12 hours
Philosophy 125, 150, 175	12 hours
Social Science	4 hours

Sophomore year

Education 200, 201, 322	9 hours
Major or teaching areas or electives	24 hours
Philosophy 225, 250	8 hours
Physical Education 353 and activities	5 hours
Theology 120	4 hours

Junior year

Education 325, 330, 331, 332, 337, 441	19 hours
Major or teaching areas or electives	12 hours
Science or mathematics	4 hours
Speech 320	4 hours
Theology 220, 320	8 hours

Senior year

Education 445 and one 430 series course	14 hours
Major or teaching areas or electives	16 hours
Science or mathematics and elective	7 hours
Social science	4 hours
Theology core elective	4 hours

Total.....190 hours

Bachelor of Education Elementary

Freshman year

English 100, 160, 180 or 190	12 hours
History 102 and 231	8 hours
Major or teaching areas or electives	12 hours
Philosophy 125, 150, 175	12 hours
Social Science	4 hours

Sophomore year

Biology 303, 304	4 hours
Education 200, 201, 322, 372, 374	16 hours
Major or teaching areas or electives	8 hours
Mathematics	4 hours
Philosophy 225, 250	8 hours
Physical Education 352 and activities	5 hours
Theology 120	4 hours

Junior year

Education 325, 330, 331, 332, 336, 340, 370, 446	26 hours
Major or teaching areas or electives	4 hours
Music 114	3 hours
Speech 320	4 hours
Theology 220, 320	8 hours

Senior year

Education 420, 440	16 hours
History 341	4 hours
Major or teaching areas or electives	20 hours
Science 113	4 hours
Theology core elective	4 hours

Total.....190 hours

Education Courses

- Ed 200 Foundations of American Education 3 credits**
Philosophy, history, organization and administration of public, private and Catholic education in the United States; nature of the teaching profession, its opportunities, requirements and problems.
- Ed 201 Introduction to Educational Statistical Method 2 credits**
Use of the empirical method, nature of measurement, methods of organizing data, central tendency, variability and correlation; logical application of these concepts by the teacher.
- Ed 305 Philosophy of Education 4 credits**
Philosophies of education in the American schools.
- Ed 322 Psychology of Development 4 credits**
A survey of developmental changes in the life span of the normal human being with emphasis on school age years. Prerequisite: Ed 201.
- Ed 323 Psychology of the Child 3 credits**
Principles, factors, stages and problems in child development from conception to puberty. Prerequisite: Ed 201.
- Ed 324 Psychology of Adolescence 3 credits**
Principles, factors, stages and problems in the development of the adolescent from puberty to adulthood. Prerequisite: Ed 201.
- Ed 325 Psychology of Classroom Learning 3 credits**
Study of the learning process, development of desirable school behavior; evaluation of learning; gaining optimum student learning. Prerequisite: Ed 322.
- Ed 326 Child Development Laboratory 2 credits**
Ed 327 Child Development Laboratory 2 credits
Ed 328 Child Development Laboratory 2 credits
Case study of children. Participants gather information about an individual, present the accumulating data to the study group for criticism and group analysis and write an interpretation of the dynamics underlying the child's learning behavior and development. Prerequisite: Ed 322 or 323 or 324.
- Ed 329 Workshop in Child Study Leadership 2-3 credits**
Training for group leaders in the program of child study. Prerequisite: Ed 326.
- Ed 330 Principles of Teaching 3 credits**
Application of psychological principles of learning to the practical problems of organizing and presenting learning materials in actual classroom situations. Prerequisite: Ed 325.
- Ed 331 Directed Observation of Teaching 2 credits**
Observation, analysis and reporting on typical classes in the elementary and secondary schools of the Seattle school system; taken in conjunction with Ed 330. Prerequisite: Ed 325.
- Ed 332 Audio-Visual Aids 2 credits**
Theory and use of audio-visual aids in the classroom; taken in conjunction with Ed 330, 331. Prerequisite: Ed 325.
- Ed 335 The Kindergarten-Primary 3 credits**
Principles, organization and methods of teaching.
- Ed 336 Fundamentals of Reading Instruction—Elementary 3 credits**
Nature of the reading process, sequence of skills K-6, recommended practices, materials, methods of diagnosis and evaluation. Prerequisites: Ed 322, 325 (may be taken concurrently with Ed 330, 331, 332).
- Ed 337 Fundamentals of Reading Instruction—Secondary 3 credits**
Development of reading and study skills; reading in content areas; methods of diagnosis and evaluation and study special reading programs. Prerequisites: Ed 322, 325 (may be taken concurrently with Ed 330, 331, 332).
- Ed 338 Remedial Reading Techniques 3 credits**
Analysis of and remedial techniques for reading problems. Prerequisite: Ed 325.
- Ed 340 Fundamentals of Mathematics Instruction—Elementary I 4 credits**
- Ed 341 Fundamentals of Mathematics Instruction—Elementary II 4 credits**
(I) Study of number systems including basic operations and properties of numbers; principles of teaching these concepts in kindergarten through grade 6. Prerequisite: Ed 325. (II) Emphasis on geometry and measurement; principles of teaching these in kindergarten through grade 6. Prerequisite: Ed 340.
- Ed 370 Arts and Crafts in the School 3 credits**
A laboratory course for experience in artistic expression in basic art media in elementary and secondary schools.
- Ed 372 World Geography 4 credits**
A survey of the world's land forms; climate; soils; minerals; plant and animal life; man's relation to his physical environment.
- Ed 373 Story Telling—Primary 2 credits**
Selection and interpretation of kindergarten-primary grade literature. For kindergarten-primary grade teachers and elementary school librarians.
- Ed 374 Literature for Children 3 credits**
Survey of the present field of literature for pre-school, primary and elementary grades.
- Ed 375 Literature for Youth 3 credits**
Survey of junior books and an analysis of adult books suitable for the young adult.
- Ed 378 Children's Drama 3 credits**
The use of drama in the classroom; creative drama techniques.
- Ed 401 Workshop in Elementary School Methods 3 credits**
- Ed 402 Workshop in Secondary School Methods 3 credits**
- Ed 403 Workshop in Improvement of Instruction 3 credits**
- Ed 404 Workshop in Elementary School Curriculum 3 credits**
- Ed 405 Workshop in Secondary School Curriculum 3 credits**
- Ed 406 Workshop in Audio-Visual Methods 3 credits**
- Ed 407 Workshop in Television Teaching 3 credits**
- Ed 408 Workshop in Business Education 3 credits**
- Ed 409 Workshop in Secretarial Studies 3 credits**
- Ed 410 Workshop in Elementary School Creative Writing 3 credits**
Individualized study, research and development of specific curricular programs under the direction of a subject field specialist.

- Ed 411 Organization of Library Materials 3 credits**
Principles and techniques of cataloging, organization, classification and subject heading assignment; study of Dewey decimal system.
- Ed 412 Library Reference Materials 3 credits**
The school librarian's services related to information for classroom teachers; examination of the major reference sources such as encyclopedias, dictionaries, indexes, atlases and instructional aid files.
- Ed 415 Library Administration 3 credits**
Organization of the school library; study of standards, utilization, plans, selection of materials, equipment and personnel.
- Ed 420 Teaching Elementary School Subjects 4 credits**
General methods of teaching in specific subjects, areas and levels of the elementary school. Prerequisite: Ed 330.
- Ed 421 Teaching Elementary School Language Arts 2 credits**
Adaptation of general methods of teaching to the area of language arts in the elementary school. Taken in same quarter with Ed 440. Prerequisite: Ed 330.
- Ed 422 Teaching Elementary School Social Studies 2 credits**
Adaptation of general methods of teaching to the area of social studies in the elementary school. Taken in same quarter with Ed 440. Prerequisite: Ed 330.
- Ed 423 Teaching Elementary School Art 2 credits**
Adaptation of general methods to the teaching of art in the elementary school. Taken in same quarter with Ed 440. Prerequisite: Ed 330.
- Ed 424 Teaching Elementary School Music 2 credits**
Adaptation of general methods of teaching to the area of elementary school music. Taken in same quarter with Ed 440. Prerequisite: Ed 330.
- Ed 425 Teaching Elementary School Religion 2 credits**
Adaptation of general methods of teaching to the area of elementary school religion. Taken in same quarter with Ed 440. Prerequisite: Ed 330.
- Ed 426 Special Education—Teaching Trainables 2 credits**
Materials and techniques for educating the severely retarded child.
- Ed 427 Special Education—Teaching Educables 2 credits**
Materials and techniques for educating the moderately retarded child.
- Ed 428 Montessori Method of Teaching 3 credits**
History, philosophy, basic principles and teaching methods of Dr. Maria Montessori.
- Ed 429 Workshop in Montessori Education 3 credits**
Demonstration and application of Montessori methods and materials in teaching preschool and primary levels. Prerequisite: Ed 428.
- Ed 430 Teaching Secondary School Subjects 4 credits**
General methods of teaching in specific subjects, areas and levels of the secondary school. Taken in same quarter with Ed 445. Prerequisite: Ed 330.
- Ed 431 Teaching Secondary School English and Speech 2 credits**
Adaptation of general methods of teaching to the secondary school areas of English and speech. Taken in same quarter with Ed 445. Prerequisite: Ed 330.
- Ed 432 Teaching Secondary School Social Sciences 2 credits**
Adaptation of general methods of teaching to the secondary school area of Social Sciences. Taken in same quarter with Ed 445. Prerequisite: Ed 330.
- Ed 433 Teaching Secondary School Languages 2 credits**
Adaptation of general methods of teaching to the secondary school area of foreign languages. Taken in same quarter with Ed 445. Prerequisite: Ed 330.
- Ed 434 Teaching Secondary School Science 2 credits**
Adaptation of general methods of teaching to the secondary school area of science. Taken in same quarter with Ed 445. Prerequisite: Ed 330.
- Ed 435 Teaching Secondary School Mathematics 2 credits**
Adaptation of general methods of teaching to the secondary school area of mathematics. Taken in same quarter with Ed 445. Prerequisite: Ed 330.
- Ed 436 Introduction to Modern Catechetics 2 credits**
Historical courses for renewal in teaching scripture and theology affecting religious education; Kerygmatic catechetics and the psychological approach.
- Ed 437 Themes and Issues of Modern Catechetics 2 credits**
Pre-evangelism. Personalism versus commitment to community. Resurrectional theology as the heart of Kerygma. Scriptural descriptions of Church, liturgy and witness.
- Ed 438 Laboratory Experience—Elementary 1-6 credits**
Ed 439 Laboratory Experience—Secondary 1-6 credits
Directed experience with pupils on the elementary or secondary school level. Prerequisite: Ed 330.
- Ed 440 Student Teaching—Elementary 12 credits**
Ed 441 Student Teaching—Elementary 6 credits
One quarter of either full-day (12 credits) or part-day (6 credits) of supervised teaching experience on the elementary school level. Prerequisite: Ed 330.
- Ed 445 Student Teaching—Secondary 12 credits**
Ed 446 Student Teaching—Secondary 6 credits
One quarter of either full-day (12 credits) or part-day (6 credits) of supervised teaching experience on the secondary school level. Prerequisite: Ed 330.
- Ed 451 Art Education—Beginning Media 3 credits**
Ed 452 Art Education—Intermediate Media 3 credits
Ed 453 Art Education—Advanced Media 3 credits
Teaching of art media which can be utilized by the general classroom teacher in the elementary school and junior high school general art programs. For experienced teachers with majors other than art.
- Ed 460 Speech Correction 3 credits**
Analysis of more common speech problems of the classroom and demonstration of remedial techniques.
- Ed 461 Speech Training for the Retarded 3 credits**
Teacher's course in special techniques of speech development for the mentally retarded.

- Ed 467 Educational Sociology** 3-4 credits
Social nature of education, interrelationship of society and education, cultural and social media and agencies.
- Ed 471 Geography of the Pacific Northwest** 3 credits
A regional survey emphasizing natural resources, their use and role in urban and rural developments.
- Ed 472 Geography of the Western Hemisphere** 3 credits
Natural resources of the Western hemisphere and their effect upon world trade and international relations.
- Ed 473 Geography of Asia** 3 credits
A survey of countries and regions; their resources, economic activities, settlement patterns and international relations.
- Ed 474 Geography of the Pacific Rim** 3 credits
Physical geography of the areas bordering the Pacific, trade and international relations.
- Ed 475 Geography of North America** 3 credits
Physical geography of North America with emphasis on the cultural and economic results of resources.
- Ed 476 Geography of South America** 3 credits
Physical geography of South America with emphasis on the cultural and economic results of resources.
- Ed 490 Seminar in Great Teachers and Ideas of Western Civilization I** 4 credits
Themes of thought; philosophy, theology, social sciences and behavioral science; development of independent study; dialogue method; discussion based on the Great Books, the Gateway Series to the Great Books and other writings of Great Teachers.
- Ed 491 Seminar in Great Teachers and Ideas of Western Civilization II** 4 credits
Imaginative and historical literature; fine prose and poetry, plastic arts, architecture and music.
- Ed 492 Seminar in Great Teachers and Ideas of Western Civilization III** 4 credits
Science and mathematics; Newton, Kepler, Boyle, Dalton, Joule, Coulomb, Planck and Einstein.
- Ed 495 Institute on Teaching the Great Teachers** 2-5 credits
Based on the Great Books of the Western World, the Gateway Series and writings of other Great Teachers. Use of the dialogue and discussion methods and independent study for secondary school use.
- Ed 497 Investigation of Special Topics** 1-4 credits
Ed 498 Investigation of Special Topics 1-4 credits
Ed 499 Investigation of Special Topics 1-4 credits
Supervised research work. Open to seniors in education with the approval of their adviser and the dean.

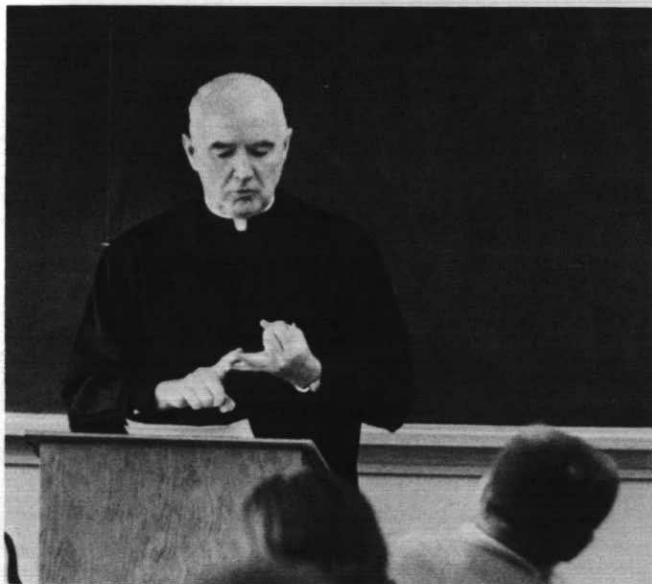
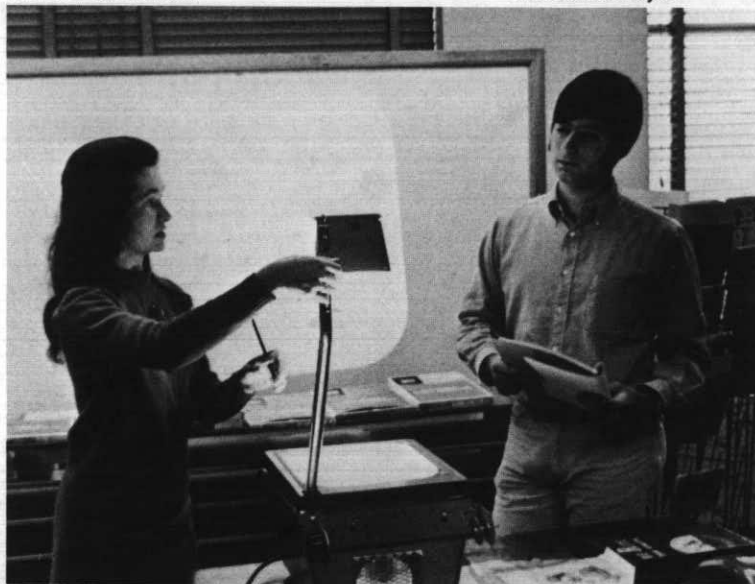


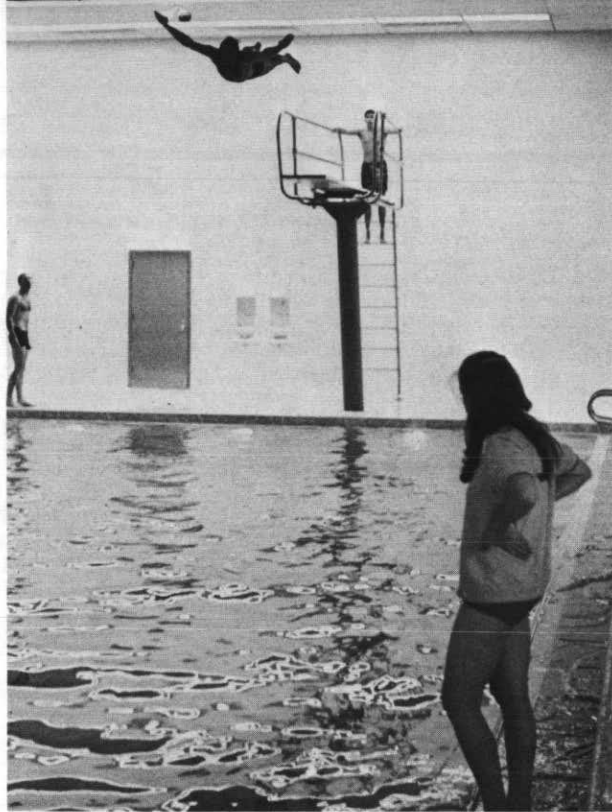
- Ed 500 Educational Research 3 credits**
Basic types and techniques of research; analysis of graduate research; submission of tentative research project. Required of all candidates for the master's program.
- Ed 501 Educational Statistics 3 credits**
Basic measures of central tendency, variability, correlation, reliability and methods of graphic presentation. Required of all candidates for the master's degree.
- Ed 510 Introduction to Guidance 3 credits**
An overview of the philosophy, principles and services of school guidance for classroom teachers and beginning guidance specialists.
- Ed 511 Organization and Administration of Guidance Services 3 credits**
Consideration of the various guidance services offered in schools with particular reference to their organization and administration as well as the ethics and legality involved. Prerequisite: Ed 510.
- Ed 512 Informational Services in Guidance 3 credits**
Study of the occupational, educational and social information necessary for the effective guidance of students; supplemented with appropriate field visitations. Prerequisite: Ed 510.
- Ed 513 Principles and Practices in Counseling 3 credits**
Study of the various theories of counseling with opportunities for in-class practice in simulated counseling interview situations of the type encountered in schools. Prerequisite: Ed 510.
- Ed 514 Contemporary Issues in Counseling 3 credits**
A critical exploration of current controversial concerns in the field of school counseling conducted in seminar style. Prerequisite: Ed 513.
- Ed 515 Guidance Services for Culturally Disadvantaged Students 3 credits**
Specialized procedures and essential socio-economic and cultural knowledge required for effective personnel services in schools providing for large numbers of culturally disadvantaged students.
- Ed 519 Group Counseling: Theory and Procedures 2 credits**
Emphasis on the theory and practice of group counseling, especially in an educational or vocational setting. Opportunities for in-class practice will be provided to integrate theory with procedures.
- Ed 520 Advanced Study of Children 2 credits**
Ed 521 Advanced Study of Children 2 credits
Opportunity to observe and record scientifically the behavior of an individual child in a nearby school.
- Ed 522 Child Psychology Seminar 4 credits**
Investigation and reporting on original studies in child psychology; includes a personal report on an investigation of some specific phase or problem. Prerequisites: Ed 322 or 323; Ed 501.
- Ed 523 Adolescent Psychology Seminar 4 credits**
Investigation and reporting on original studies in adolescent psychology, including a personal report on an investigation of some specific phase or problem. Prerequisites: Ed 322 or 324, Ed 501.
- Ed 524 Psychology of the Exceptional Child 4 credits**
A study of the atypical child who deviates from the normal to well below or above the average; tests for evaluation; consideration of remedial techniques.
- Ed 525 Psychology of Learning Seminar 4 credits**
Investigation, analysis and reporting on original studies in the field of learning; includes a report on an investigation of some specific phase or problem. Prerequisites: Ed 325, Ed 501.
- Ed 526 Measurement and Evaluation for Classroom Teachers 3 credits**
Nature, uses and limitations of various measurement instruments used in school testing programs; exposure to representative standardized test materials. Not interchangeable with Ed 527 or Ed 528. Prerequisite: Ed 501.
- Ed 527 Measurement in Psychology and Education 3 credits**
Theoretical foundations of modern measurement practices in education and related fields; taught with the co-operation of the Psychology Department for prospective guidance specialists. Prerequisite: Ed 501.
- Ed 528 Psychological Tests 3 credits**
Application of principles of psychological measurement in the critical examination of representative standardized tests used in schools with opportunities for scoring and interpretive practice. Prerequisite: Ed 527.
- Ed 529 Character Education 3 credits**
Psychological foundations of character development, will-training, values, nature of morality, the relation of character to education and studies in character education. Prerequisite: Ed 325.
- Ed 530 Seminar in Elementary Methods—Subject Area 3 credits**
- Ed 531 Seminar in Secondary Methods—Subject Area 3 credits**
Investigation, analysis and reporting on original studies in teaching methods; includes a personal report of an intensive nature on some phase.
- Ed 536 Seminar in Teaching of Reading 3 credits**
Development of reading skills at all levels; examination and evaluation of current reading practices and programs.
- Ed 538 Supervision of Instruction 3 credits**
Improvement of instruction through supervisory leadership.
- Ed 540 Fundamentals of Curriculum Development 3 credits**
Historical, philosophical foundations, principles, types and methods of curriculum development and organization.
- Ed 541 Elementary Curriculum Seminar 3 credits**
Investigation and analysis of changes and trends, including a personal intensive report on some phase of curriculum on the elementary school level. Prerequisite: Ed 540.
- Ed 542 Junior High School Curriculum Seminar 3 credits**
Investigation and analysis of changes and trends, including a personal intensive report on some phase of curriculum on the junior high school level. Prerequisite: Ed 540.

- Ed 543 Senior High School Curriculum Seminar** 3 credits
Investigation and analysis of changes and trends, including a personal intensive report on some phase of curriculum on the senior high school level. Prerequisite: Ed 540.
- Ed 544 Seminar: The Gifted Child—Elementary** 3 credits
Principles, curricula and methods appropriate to teaching the gifted child in the elementary school. Prerequisite: Ed 540.
- Ed 545 Seminar: The Gifted Child—Secondary** 3 credits
Principles, curricula and methods appropriate to teaching the gifted youth in the secondary school. Prerequisite: Ed 540.
- Ed 546 Special Education Seminar** 3 credits
Investigation, analysis and reporting on original studies and trends in education of the mentally retarded. Prerequisite: Ed 524.
- Ed 550 Practicum in Group Processes** 3 credits
Supervised off-campus experience with youth in a group dynamics situation oriented toward the school guidance function. Offered summer quarter with limited enrollment approved by practicum supervisor. Prerequisite: Ed 513.
- Ed 551 Counseling Practicum** 3-6 credits
Supervised counseling experience wherein the counselor candidate is responsible for actual counseling cases and small group guidance situations. Prerequisite: Ed 513.
- Ed 552 Field Experience in Guidance** 4 credits
Supervised on the job participation in guidance activities in a regular school setting or in relevant community agencies. Three clock hours per school week during one full semester. Permission in advance. Prerequisites: Ed 512, 513, 528.
- Ed 553 Adult Education Practicum** 4 credits
Practical experience in instructing adults in the area of the candidate's competence.
- Ed 560 Philosophy of Education** 3 credits
Philosophical foundations of education.
- Ed 561 History of Education** 3 credits
Great educators, theories and systems from the Hebrews, Greeks and Romans to the present.
- Ed 562 Jesuit Education** 3 credits
History, principles and methods of the Jesuit system of education; analysis of the Ratio Studiorum. Prerequisite: Ed 561.
- Ed 563 Comparative Education** 3 credits
Investigation and comparison of the leading national and cultural systems of education of the world. Prerequisite: Ed 560.
- Ed 565 Seminar in Educational Classics I** 3 credits
Ed 566 Seminar in Educational Classics II 3 credits
Ed 567 Seminar in Educational Classics III 3 credits
(I) Ancient writers: Plato, Aristotle, Plutarch, Cicero, Quintilian; (II) Middle writers: New Testament, Augustine, Aquina, Tertullian, Clement, Maurus, Erasmus, Comenius; (III) Modern writers: Rousseau, Locke, Pestalozzi, Nerbart, Froebel. Prerequisites: Ed 560, 561.
- Ed 570 Seminar on the American Community College** 3 credits
Consideration of the college parallel, vocational, technical and community service roles. The history, status and projected development of community colleges. Staffing needs and qualifications.
- Ed 571 Seminar on Community College Instructional Problems** 3 credits
Identification of instructional programs and problems pertinent to the community college. Contrasts with and similarities to problems associated with senior institutions. Trends in curricula, personnel and selection.
- Ed 572 Foundations in Adult Education** 3 credits
The place of adult or continuing education in the total spectrum of American education. Required of the candidate for the M.Ed. in Adult Education Administration.
- Ed 573 Special Problems of the Adult Learner** 3 credits
Characteristics of various adult groups and related instructional problems with suggested approaches.
- Ed 574 Administration of Adult Education Programs** 3 credits
Problems relating to the development, financing, staffing, supervision and evaluation of instructional programs for adults.
- Ed 575 Course Development and Instructional Resources** 3 credits
Organizing a course of instruction for adults in the candidates' area of competence; collecting and editing supplementary materials; compiling a bibliography.
- Ed 577 Seminar in Contemporary World Problems** 4 credits
Location, use and organization of resources and materials in building background information for social studies courses.
- Ed 579 Writing for Publication** 3 credits
Advanced course in the preparation and composition of articles for learned and professional journals in education. Prerequisite: Permission of adviser.
- Ed 580 Seminar in School Administration** 3 credits
Contemporary problems and trends; analysis and evaluation.
- Ed 581 Seminar in Elementary School Administration** 3 credits
Duties of administrators; criteria; administrative process; case studies. Prerequisite: Ed 541 or permission.
- Ed 582 Seminar in Secondary School Administration** 3 credits
Duties of administrators; criteria; administrative process; case studies. Prerequisites: Ed 542 or 543 or permission.
- Ed 583 School Finance** 3 credits
Historical development; balanced taxation; school support program; budgets; problems and controversies.
- Ed 584 School Law** 3 credits
Federal and state laws regarding education; liability and protection of schools; legal status of personnel; case precedents.

- Ed 585 School Plant Planning** 3 credits
Plant requirement projections; site selections; staff and patron planning; leadership of principal.
- Ed 586 School Personnel** 3 credits
Recruitment, selection, orientation, induction and retention of certificated and non-certificated personnel.
- Ed 587 School Public Relations** 3 credits
Purposes and media for informing the general public and school patrons about school programs and needs; public relations roles of teacher and administrative officers.
- Ed 588 Administrative Internship I** 3 credits
Ed 589 Administrative Internship II 3 credits
Supervised experiences in the administration of a school. Prerequisite: Course work in school administration and permission the spring prior to year of internship. Required for credentials.

- Ed 590 Graduate Research Readings** 1-4 credits
Ed 591 Graduate Research Readings 1-4 credits
Intensive library research. Approximately 30 hours of reading and allied assignments for each credit. Completion reports will include analysis and critical appraisal of materials read. Prerequisite: Permission of adviser.
- Ed 592 Field Study for Administrative Internship** 3 credits
A research report of a problem in school administration. Prerequisite: Ed 500, 501 and permission.
- Ed 593 Graduate Project** 3 credits
A scholarly graduate project employing a conventional research method. For non-thesis degrees. Prerequisites: Ed 500 and 501. Permission and completion of basic courses in major.
- Ed 599 Thesis** 10 credits
A contribution to the body of essential knowledge in the fields of teaching and specialized education. Required of M.A. in Ed. candidates. Prerequisites: Ed 500 and 501; permission and completion of basic courses in major.





Health and Physical Education

Joseph T. Page, Ph.D.,
Associate Dean for Physical Education

ways requisite for successful teaching and leadership in the field, will be offered. Candidates must demonstrate superior physical skills, intellectual competency, and desirable personality and character traits before they will be accepted.

Candidates for teaching certificates will complete the required courses in teacher education. Upon graduation, certified teachers will have, in addition to the general and professional education requirements, a total major area of 40 credit hours and, for the minor, 20 credit hours in health and physical education.

Departmental Requirements

BACHELOR OF ARTS IN EDUCATION (Health and Physical Education)—45 hours of health and physical education courses which must include PE 200, 205, 220, 230, 400, 460 and a minimum of 16 hours in major activities.

UNDERGRADUATE MINOR (Health and Physical Education)—24 hours of health and physical education which must include PE 205, 220, 400, 460 and 12 credit hours in major activities.

Objectives

The Health and Physical Education department has as its prime objectives the physical and neuromuscular skill development and the recreational welfare of all students. The department fulfills three major functions at Seattle University. These are:

The professional preparation of young men and women as teachers of health and physical education.

The conduct of a wide variety of intramural sports activities for recreational and social benefit of all students.

The sponsorship of a broad range of physical education instructional service programs designed to meet the physical activity needs of college men and women.

Degree Offered

Bachelor of Arts in Education

General Degree Requirements

Students in the fields of health and physical education must satisfy University core curriculum requirements as given on page 24 of this bulletin as well as those of the School of Education.

All students planning to receive a teaching certificate must be accepted by the School of Education but such acceptance does not imply that the student will be permitted to pursue this teaching field. Students may indicate their interest in this area at the time of application for admission to the School of Education.

During the succeeding months their aptitude and promise for the field of physical education will be evaluated. Counseling, designed to assist the student to develop in

Bachelor of Arts in Education Secondary

Freshman year

English 100, 160, and 180 or 190	12 hours
History 101, 102 and core elective	12 hours
Philosophy 125, 150, 175	12 hours
Physical Education 200, 205 and activities	8 hours
Social Science	8 hours

Sophomore year

Biology 200	4 hours
Education 200, 201, 322	9 hours
Philosophy 225, 250	8 hours
Physical Education 220, 230 and electives	12 hours
Physical Education activities	4 hours
Science or mathematics and elective	8 hours
Theology 120	4 hours

Junior year

Education 325, 330, 331, 332, 337, 441	19 hours
Physical Education 353, 400	5 hours
Physical Education activities	6 hours
Science or mathematics	4 hours
Theology 220, 320	8 hours
Electives	6 hours

Senior year

Education 445	12 hours
Physical Education 460 and electives	8 hours
Physical Education activities	4 hours
Social Science	4 hours
Speech 320	4 hours
Theology core elective	4 hours
Electives	8 hours

Total.....190 hours

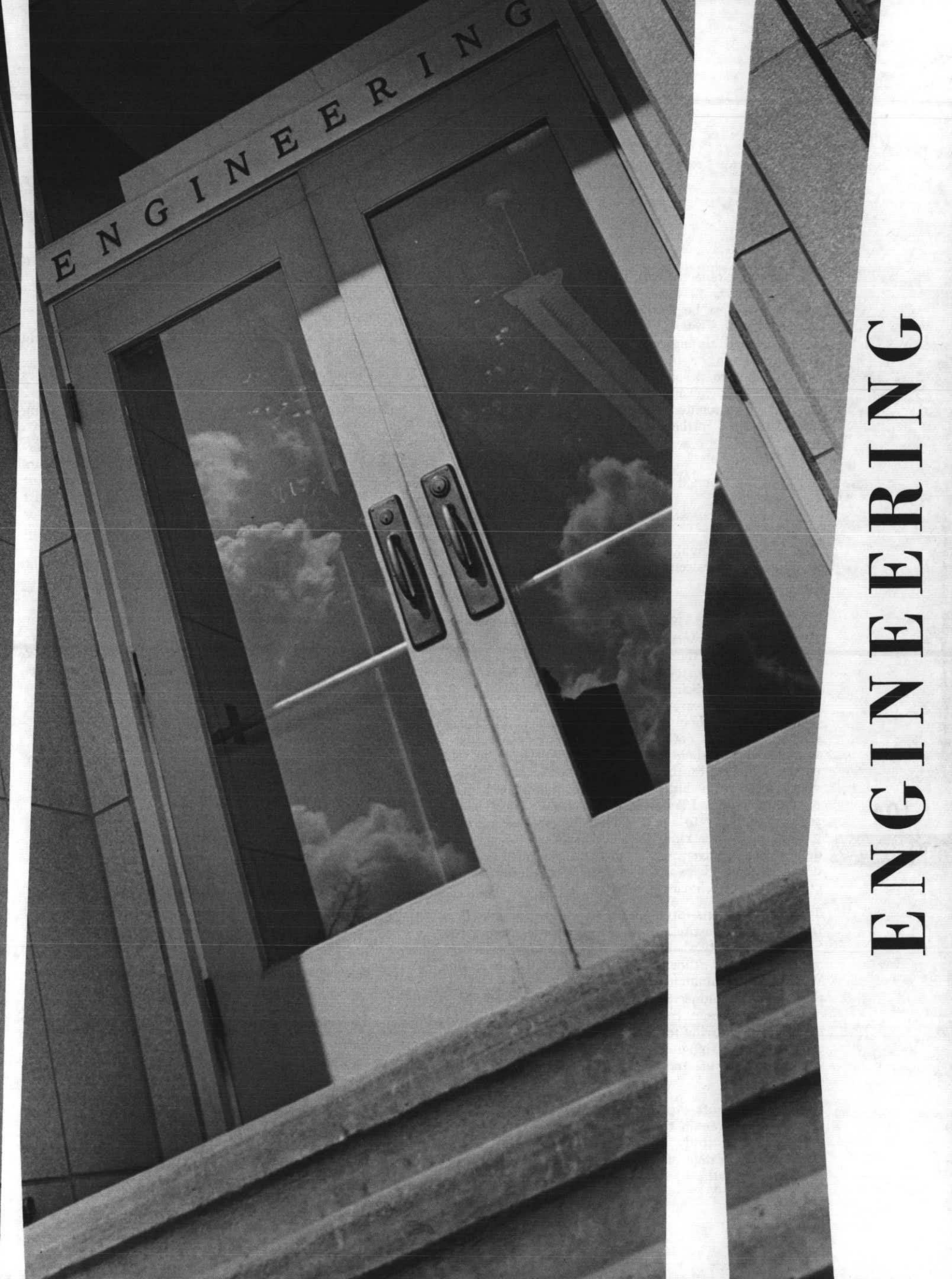
- PE 120 Badminton 1 credit
- PE 121 Bowling 1 credit
- PE 122 Golf 1 credit
- PE 123 Gymnastics 1 credit
- PE 124 Beginning Swimming 1 credit
- PE 125 Tennis 1 credit
- PE 126 Volleyball 1 credit
- PE 127 Flycasting 1 credit
- PE 128 Mountaineering 1 credit
- PE 129 Skiing 1 credit
- PE 130 Adapted Activities 1 credit
- PE 131 Archery 1 credit
- PE 132 Handball 1 credit
- PE 133 Squash 1 credit
- PE 134 Advanced Swimming 1 credit
- PE 135 Lifesaving Water Safety 2 credits
- PE 136 Field Hockey—Women 1 credit
- PE 137 Basketball—Women 1 credit
- PE 138 Conditioning—Women 1 credit
- PE 139 Basketball—Men 1 credit
- PE 140 Soccer—Men 1 credit
- PE 141 Weight Training 1 credit
- PE 142 Developmental Physical Education—Men 1 credit
- PE 143 Modern Dance 1 credit
- PE 144 Wrestling—Men 1 credit
- Basic instructional course in activity indicated designed to meet the physical and recreational needs of college men and women.
- PE 195 Movement Exploration 2 credits
- PE 196 Elementary Gymnastics 2 credits
- PE 197 Track and Soccer—Men 2 credits
- PE 198 Track and Softball—Women 2 credits
- Activity courses for physical education majors only.
- PE 200 Personal and Community Health 4 credits
- A comprehensive course covering all basic aspects of health education; personal health problems; school health programs; community health agencies and problems.
- PE 205 First Aid and Safety 2 credits
- A basic course in emergency procedures leading to the Standard American Red Cross certificate.
- PE 220 Physiology of Exercise 4 credits
- Study of physical changes as the result of muscular activity; the muscular, circulatory and cardio-respiratory systems. Prerequisite: BI 200.
- PE 230 Kinesiology 2 credits
- Study of muscular action and principles of motor movement. Prerequisites: BI 200, PE 220.
- PE 294 Elementary Aquatics 2 credits
- PE 295 Badminton and Volleyball 2 credits
- PE 297 Golf and Tennis 2 credits
- Activity courses for physical education majors only.
- PE 352 Orientation to Health and Physical Education—Elementary 3 credits
- Curriculum purposes, procedures and techniques. Includes legal liability, evaluation. Required of all elementary education majors.
- PE 353 Orientation to Health and Physical Education—Secondary 3 credits
- Objectives, content services and relationship to the total school program. Required of secondary education majors.
- PE 393 Basketball—Women 2 credits
- PE 394 Basketball and Baseball—Men 2 credits
- PE 395 Football and Speedball—Men 2 credits
- PE 396 Field Hockey and Speedball—Women 2 credits
- PE 397 Wrestling and Weight Training 2 credits
- PE 398 Modern Dance 2 credits
- Activity courses for physical education majors only.
- PE 399 Adapted Physical Education 2 credits
- PE 400 Class Techniques in Physical Education 2 credits
- Procedures in teaching physical activity classes in secondary schools; administrative class details, including lesson planning grading, records, student leaders.
- PE 438 Laboratory Experience—Elementary 1-6 credits
- Supervised and directed experiences with children at the elementary age levels.
- PE 439 Laboratory Experience—Secondary 1-6 credits
- Supervised and directed experiences with children.
- PE 440 Tests and Measurement in Physical Education 2 credits
- The utilization of available testing procedures in physical education; evaluation of student achievement in terms of objectives. Prerequisite: Ed 201.
- PE 450 Principles and Practices in Physical Education 2 credits
- Concentrated analysis and study of the foundational principles and practices of physical education through historical development; present application and significance.
- PE 460 Organization and Administration of Physical Education 4 credits
- The summary professional course in physical education; includes service, intramural and interscholastic programs; stresses curriculum, scheduling, facilities. Prerequisites: Upper division standing. Departmental approval.
- PE 493 Advanced Gymnastics 2 credits
- PE 494 Advanced Aquatics 2 credits
- PE 495 Folk and Square Dancing 2 credits
- Activity courses for physical education majors only.
- PE 497 Special Topics 1-4 credits
- PE 498 Investigation of Special Topics 1-4 credits
- PE 499 Investigation of Special Topics 1-4 credits

Health and Physical Education Courses



ENGINEERING

ENGINEERING



School of Engineering

David W. Schroeder, Ph.D., Dean

Objectives

The primary objective of Seattle University's School of Engineering is to teach those phases of engineering which can best be learned in school. These are principally the theoretical phases. Practical phases can be learned better through experience either in the co-operative program or in practice after graduation. The School aims to prepare the student for lifetime effectiveness. This means an emphasis on knowledge of slowest obsolescence since this is the most useful as a foundation for further education.

Accreditation

Engineering Council for Professional Development

Organization

The School of Engineering has three departments: Civil Engineering, Electrical Engineering and Mechanical Engineering.

Admission Requirements

Admission requirements for the School of Engineering are identical to those of the University except that three years of mathematics are required for regular admission to the School of Engineering. As much additional mathematics and physical science as can be taken in high school is strongly recommended. Those students who are not prepared to start calculus in the first quarter of their freshman year will have to add college algebra to the programs listed. Any student who must begin his college mathematics with trigonometry, will find it necessary to attend some summer sessions in order to avoid having his engineering program extend over more than four calendar years. Students with deficiencies in mathematics are strongly urged to make these up in the summer quarter before entering the freshman year at Seattle University.

Transfer Students—Students with advanced standing from another institution or from another school of Seattle University should consult the admission section of this bulletin. Students transferring from one of the Washington community colleges should consult either the Dean of Engineering at Seattle University or their community college counselor. Detailed recommendations for transferring to the School of Engineering from each of the Washington community colleges have been prepared and are on file with community college counselors.

Graduate Students—Applicants should have a bachelor of science degree in the same field as that in which they intend to study or in a closely related field. A grade point average of 2.75 or higher in the last two years work for the bachelor's degree is required.

Degrees Offered

Bachelor of Civil Engineering
Bachelor of Electrical Engineering
Bachelor of Mechanical Engineering
Master of Science in Electrical Engineering (evening classes only)
Master of Science in Engineering (evening classes only)
Master of Science in Mechanical Engineering (evening classes only)

Two-Degree Program—The attainment of the engineering degree requires a minimum of 192 quarter hours as compared to a University minimum of 180 quarter hours. The extra quarter hours may be applied toward a second bachelor's degree. A total of 228 quarter hours are required for two bachelor's degrees but all requirements for both degrees must be met. The Bachelor of Science in General Science or the Bachelor of Science in Military Science are the recommended second degrees for engineers to obtain.

Co-operative Program—Students entering Fall quarter 1968 or later may apply for the co-operative engineering education program. The program requires five or six regular academic quarters and thereafter will alternate an academic quarter with a quarter at work in a related industrial occupation. The University will assist students in obtaining suitable industrial employment.

Five-Year Program—A combined five-year program leading to the Bachelors Degree in Engineering and a Masters Degree in Business Administration is available.

Curricula

All the curricula in the School of Engineering begin with a solid preparation in mathematics, physics and the engineering sciences. The first two years are devoted principally to such subjects. Approximately one-half of the last two years is devoted to study in the special branches of engineering. Over-specialization is avoided. There is considerable laboratory work to acquaint the student with the experimental method of solving technical problems.

In order to round out a truly liberal education, designed to form the basis for life-long intellectual, cultural and professional growth, a specially designed humanities sequence is distributed through all four years of the curricula.

General Program Requirements

Students in the School of Engineering follow a modified form of the core curriculum found on page 24 of this bulletin. Students in the School of Engineering must take the following subjects: English 100 and 160, Philosophy 125, 150 and 225, Economics 271 and 12

hours of humanities electives. Catholic students also take Theology 120, 320 and 420 or alternates for 420 and students who are not Catholic take Theology 110 or 120 and 8 additional hours of humanities core electives. These humanities electives must be chosen from Pl 175 or 250, Th 220, En 140, 150, 170, 180, 190, Hs 101, 102, 103, 231, 251, 281, Economics 272, 273, Political Science 160, 200, 214, Psy 100, 310, Soc 101, 102, 200. Prerequisite requirements must be followed. The student must maintain a cumulative grade point average of 2.0 in the subjects taken in his major field.

BACHELORS' DEGREES—Each of the three engineering undergraduate curricula is tabulated below in the normal sequence in which it is taken by a full time student. Most of the work of the first two years is common to all curricula. This makes it possible for a student to change his major during these two years with slight loss of credit. Students working full time are limited to not more than 10 quarter hours of study per quarter.

To gain admission to junior and senior subjects the student must have completed within 10 quarter hours of all the science, mathematics and engineering subjects required in the first two years of his curriculum.

Objectives

The principal objectives of the Civil Engineering department are two-fold: to provide trained engineers to work in the various areas of the civil engineering profession and to provide a firm foundation for graduate study.

To accomplish these ends, analysis and design courses in the fields of hydraulic, structural, transportation and sanitary engineering are offered in addition to preparatory courses in sciences and basic mechanics. A broad base of theory is provided along with sufficient quantity of current practices of the profession.

Degree Offered

Bachelor of Civil Engineering

General Program Requirements

Students in Civil Engineering must satisfy core curriculum requirements of the University as modified for the School of Engineering. See description on page 98 under School of Engineering.

Departmental Requirements

BACHELOR OF CIVIL ENGINEERING—In this degree program a minimum of 192 quarter hours credit are required. In special cases qualified students, with the approval of their adviser, may substitute equivalent or more advanced courses for those listed. A set of options in the senior year permits students to begin specialization in their choice of transportation, sanitary engineering or structures.

In special cases qualified students, with the approval of their major department, may substitute equivalent or more advanced courses in place of those listed.

Graduate Programs

MASTER OF SCIENCE DEGREES—These degrees require a minimum of 45 quarter hours of graduate study, including a thesis for which 10 quarter hours of credit is given. There is no language requirement. Mathematics 461, 462, 463 are required and should be taken early for they are prerequisite to many of the other graduate courses. The program of study is subject to the approval of the student's mentor who is chairman of the major department or his delegate.

Subjects required in the respective undergraduate curriculum may not be taken for credit toward a master's degree. Any student choosing a graduate major in a field different from his undergraduate major will generally be required to take some undergraduate courses in his new major field as determined by his mentor.

Civil Engineering

Richard T. Schwaegler, Ph.D., *Chairman*

Bachelor of Civil Engineering

Freshman year

English 100, 160.....	8 hours
Mathematics 131, 132, 133.....	12 hours
Mechanical Engineering 100, 110, 111, 112....	9 hours
Philosophy 125, 150.....	8 hours
Physics 200.....	5 hours
Theology 120.....	4 hours

Sophomore year

Civil Engineering 211, 221.....	7 hours
Economics 271.....	4 hours
Mathematics 237, 238, 241.....	12 hours
Mechanical Engineering 271, 281.....	8 hours
Physics 201, 202.....	10 hours
Theology 320 and core elective.....	8 hours

Junior year

Chemistry 314, 315.....	8 hours
Civil Engineering 323, 331, 333, 335, 345, 351, 353, 373, 381.....	29 hours
Electrical Engineering 251.....	4 hours
Mathematics 114.....	3 hours
Philosophy 225.....	4 hours

Senior year

CE 401, 441, 461, 471, 481, 496, 497, 498 plus approved 400 courses.....	28-30 hours
Mechanical Engineering 321.....	4 hours
Humanities core electives.....	12 hours
Technical electives.....	5-7 hours

Total.....192-196 hours

- CE 211 Engineering Measurements 3 credits**
 Engineering measurements as applied to civil engineering projects. Planning for surveys. Introduction to photogrammetry and extent of its use. U.S. Public Land and State Plane Coordinate Systems. Prerequisite: Sophomore standing.
- CE 221 Strength of Materials I 4 credits**
 An introduction to the mechanics of solid deformable bodies covering the relationships that exist between the external forces acting on elastic bodies and the stresses and deformations produced. Members subjected to tension, compression, flexure and torsion are studied. Selected laboratory experiments are performed. Three lectures and one laboratory period per week. Prerequisite: ME 271.
- CE 323 Strength of Materials II 4 credits**
 A continuation of the mechanics of solid deformable bodies. Additional beam topics, stability of columns, combined stresses and strains, fatigue and energy relationships are considered. Selected laboratory exercises are performed. Three lectures and one laboratory period per week. Prerequisite: CE 221.
- CE 331 Fluid Mechanics I 3 credits**
 An introduction to fluid mechanics, including fluid properties, the continuity equation, stream functions and stream lines; Euler's equation for an ideal fluid, rotational and irrotational flow concepts; development and application of the Navier-Stokes equations, the energy and momentum equations; laminar and turbulent flow and an introduction to boundary layer theory, similarity parameters and dimensional analysis; vector and Cartesian tensor notation. Three lecture hours per week. Prerequisites: ME 281, Mt 232.
- CE 333 Fluid Mechanics II 3 credits**
 Application of boundary layer theory to fluid flow, including a study of flow development; analysis of potential flow, open channel flow and an introduction to the theory of hydraulic machinery. Theory verified in laboratory study. Two lectures and one four-hour lab per week. Prerequisite: CE 331.
- CE 335 Applied Hydraulics 3 credits**
 Each student will have about one project per week in the field of incompressible flow. Projects will include pump design, hydrographic studies, graphical analysis of overflow or spillway design, model studies, varying flow analysis, economic design of pipeline projects.
- CE 345 Structural Mechanics I 3 credits**
 Analysis of statically determinate girders, trusses, space-frames and cable structures for primary stresses and deflections; use of influence lines for statically determinate structures; graphic, algebraic and matrix methods. Three lectures and one problem session per week. Prerequisite: CE 221.
- CE 351 Engineering Geology 3 credits**
 Elementary study of the material structure and internal condition of the earth and of the physical and chemical processes at work upon and within it as they influence engineering applications. Three lecture hours per week. Prerequisite: Sophomore standing.
- CE 353 Soil Mechanics 4 credits**
 Soil as a structural material; physical properties, bearing capacity and current theories of stress distribution of different types of soil; compaction and behavior under short and long duration loading. Three lecture and one problem session per week. Prerequisites: CE 323, 351.
- CE 373 Transportation I 3 credits**
 The development of transportation systems and the social and economic effects. Planning present and future systems. Methods of public and private financing.
- CE 381 Elements of Water Supply 3 credits**
 History, current status, legal considerations and projected problems of water supply. Water requirements based on population, industrial, commercial and agricultural use. Development of surface and ground water supplies. Transportation and distribution of water. Prerequisite: CE 335.
- CE 401 Contracts and Specifications 3 credits**
 The elements of estimating; types and elements of contracts; specifications for material and construction. Three lecture hours per week.
- CE 441 Structural Mechanics II 3 credits**
 Analysis of statically indeterminate girders, trusses and rigid frames for stresses and deflections; use of influence lines for indeterminate structures; solutions by work energy methods, slope-deflection, moment distribution and the force and displacement methods of matrix structural analysis. Three lectures and one problem session per week. Prerequisite: CE 345.
- CE 443 Structural Design I 3 credits**
CE 444 Structural Design II 2 credits
 Design of a variety of types of structures in steel and wood; structural details. Four lecture hours per week. Prerequisites: CE 441 for 443; CE 443 for 444.
- CE 461 Reinforced Concrete I 4 credits**
 Design of simply reinforced concrete beams, slabs, columns and footings; design of concrete mixes, together with methods of estimating volumes and cost of reinforced concrete structures. Three lecture and four laboratory hours per week. Prerequisites: CE 321, 441, 443.
- CE 463 Reinforced Concrete II 3 credits**
 Application of the elementary concepts of concrete design introduced in CE 461 to the design of retaining walls, footings, one-way slabs, two-way slabs, flat slabs and rigid frames; elementary concepts of ultimate-strength theory of design and prestressed concrete. Three lecture hours per week. Prerequisite: CE 461.
- CE 471 Transportation II 3 credits**
 Geometric planning for transportation systems. Characteristics of vehicles and their operators. Safety and utility in design of systems.
- CE 472 Transportation III 3 credits**
 Physical design of transportation facilities including terminal facilities, mass movement of people and commodities. Administration and work maintenance.

CE 481 Liquid Waste Disposal I 4 credits
Sewerage and drainage systems. Examination of water and waste. Physical treatment processes. Laboratory experiments in microbial, bacteriological and chemical examination of water and wastes. Two lectures and two laboratory periods per week. Prerequisite: Ch 315.

CE 482 Liquid Waste Disposal II 3 credits
Chemical and biological treatment, sludge disposal, disinfection, reuse of water, comprehensive planning including river basin development. Prerequisite: CE 481.

CE 483 Industrial Waste Treatment 3 credits
Stream pollution and self-purification. Analysis of industrial wastes. Selected field trips. Prerequisites: CE 482.

CE 495 Advance Studies 2-5 credits
Independent study or research under the direction of a member of the faculty, to be carried out in one specific area of civil engineering: H—fluid mechanics; ST—structures; S—soils; R—highways; W—sanitary engineering. Prerequisite: Senior standing.

CE 496 Seminar I 1 credit

CE 497 Seminar II 1 credit

CE 498 Seminar III 1 credit

Each student is required to prepare a technical paper and present it orally to the class. Prerequisite: Senior standing.

CE 499 Thesis 2 credits
Problem in analysis or design at the level of undergraduate research. Prerequisite: Senior standing.

Graduate Courses

CE 501 Engineering Statistics I 3 credits
Frequency distribution, central tendency, distribution characteristics, probability theory, binomial distribution, Poisson distribution, normal distribution, chi-squared test, variances and their properties. Prerequisite: Graduate status.

CE 502 Engineering Statistics II 3 credits
Regression, correlation, multiple linear regression, analysis of variance, design of experiments. Prerequisite: CE 501.

CE 510 Sanitary Microbiology I 3 credits
Observation of micro-organisms, bacteria, fungi, algae, protozoa and higher animals, enzymes, metabolic reactions, energy, synthesis, growth, death, pathogenicity. Prerequisite: Graduate status.

CE 511 Sanitary Microbiology II 3 credits
Water, liquid waste, industrial waste, stream pollution, biological waste treatment, trickling filters, activated sludge, oxidation ponds, anaerobic digestion, radio-activity, refuse disposal, air microbiology. Prerequisite: CE 510.

CE 520 Sanitary Engineering Design I 3 credits
Mixing, sedimentation, floatation and aerosol separation, flow through beds of solids, vacuum filtration, adsorption and leaching, heat transfer, evaporation, psychrometry and humidification, drying. Prerequisite: Graduate status.

CE 521 Sanitary Engineering Design II 3 credits
Biological oxidation principles, activated sludge processes, trickling filter processes, photosynthetic processes, composting processes, anaerobic digestion, water stabilization, ion removal, electro-dialysis, coagulation, disinfection, dry combustion, wet combustion. Prerequisite: Graduate status.



CE 522 Advanced Sanitary Laboratory 1-4 credits
A series of experiments designed to give the student an insight into the design problems and practices of secondary and tertiary treatment phenomena.

CE 530 Limnology 3 credits
Origin and features of channels, basins and estuaries, the nature of water, natural waters as environments, organisms in the environment, relationships of organisms and environment. Prerequisite: Graduate status.

CE 532 Air Pollution 3 credits
Legislative and administrative problems, community relations, effect of air pollution on health and vegetation, economic effects of air pollution, sampling methods, radioactivity, meteorology. Prerequisite: Graduate status.

CE 533 Water Resource Development I 3 credits
Planning, hydrology, river morphology, hydraulic structures, flood control. Prerequisite: Graduate status.

CE 534 Water Resource Development II 3 credits
Water power, irrigation, navigation, water supply, economic analysis. Prerequisite: CE 533.

CE 550 Advanced Structural Mechanics I 3 credits
Fundamental concepts of matrix analysis of structures, review of elementary structural theory and the principle of virtual work, development and application of the basic matrix force and displacement methods of structural analysis. Course project using computer. Prerequisite: Graduate status.

CE 551 Advanced Structural Mechanics II 3 credits
Analysis of dynamic response of structures using matrix methods, determination of natural modes and frequencies of lumped and distributed parameter systems, application to earthquakes and moving loads, differential equation and energy methods. Course project using computer. Prerequisite: CE 550.

CE 552 Advanced Structural Mechanics III 3 credits
Variational and energy methods in structural and solid mechanics, application of calculus of variations and minimal principles of mechanics to nonlinear structural analysis, elastic stability, theory of elasticity, plates and shells. Prerequisite: CE 551.

CE 580 Special Studies in Civil Engineering 3 credits

CE 581 Special Studies in Civil Engineering 3 credits
Special studies under the direction of a faculty member, for which academic credit may properly be granted. By arrangement.

CE 582 Special Studies in Civil Engineering 3 credits
Special studies under the direction of a faculty member. Master candidates who are not writing a thesis must register for this course and submit an acceptable paper.

Electrical Engineering

Francis P. Wood, S.J., M.S., *Chairman*

Objectives

Electrical engineering deals with the applications of electricity to the generation, transmission, distribution and utilization of electric power, to measurement, to control, to computation and to communication by wire and electromagnetic waves.

The specific objective of the department does not provide for undergraduate specialization in various fields but strives to provide a broad foundation based on mathematical and scientific principles that will prepare the graduate to take his place in any of the various fields of study.

The curriculum includes material in networks, electronics, radio, communication, and power apparatus and systems. Hence the student interested in electronics, in automatic control, or in any other specialty is given adequate scientific training in a well-balanced educational program.

Degrees Offered

Bachelor of Electrical Engineering
Master of Science in Electrical Engineering (evening classes only)

General Program Requirements

Students in electrical engineering must satisfy the specific core curriculum requirements of the University as modified for the School of Engineering. See description on page 98 under School of Engineering.

Departmental Requirements

BACHELOR OF ELECTRICAL ENGINEERING—In this program a total of 192 credits is required for the degree as listed in the following outline. Students exempted from the theology requirements will substitute electives from the humanities or social sciences, as approved by the department. In special cases, qualified students, with the approval of the department, may substitute equivalent or more advanced courses in place of those listed. As an example of the foregoing, qualified students may be allowed to substitute advanced courses in nuclear physics for regular electrical engineering courses.

MASTER OF SCIENCE IN ELECTRICAL ENGINEERING—All graduate students must follow the requirements of the Graduate School as detailed under the Graduate School Bulletin of Information. Attention is here directed to some special procedures

regarding graduate electrical engineering students.

- (a) Graduate students in electrical engineering, with departmental approval, may substitute for their thesis additional course work, including three credits of EE 582.
- (b) All graduate students must successfully pass a written qualifying examination based on undergraduate mathematics and engineering courses. This examination should be taken as early as possible during the program. If needed, a second sitting will be permitted.
- (c) All graduate electrical engineering students must complete the following required courses: Mt 461, 462, 463, EE 507, 511, 512, 517.
- (d) Graduate credit may be allowed for the following undergraduate courses: EE 481, 483, 485, 487.
- (e) Unclassified fifth year students may be allowed to take only the following courses: Mt 461, 462, EE 511, 512, 513, 517.

Bachelor of Electrical Engineering

Freshman year

English 100, 160.....	8 hours
Mathematics 114, 131, 132, 133.....	15 hours
Mechanical Engineering 100, 110, 112.....	6 hours
Philosophy 125, 150.....	8 hours
Physics 200.....	5 hours
Theology 120.....	4 hours

Sophomore year

Electrical Engineering 251, 253.....	8 hours
Mathematics 237, 238, 241.....	12 hours
Mechanical Engineering 271, 281.....	8 hours
Philosophy 225.....	4 hours
Physics 201, 202.....	10 hours
Theology 320 and core elective.....	8 hours

Junior year

Economics 271.....	4 hours
Electrical Engineering 255, 256, 311, 321, 323, 351, 353, 355, 375.....	28 hours
Physics 360, 361, 362.....	13 hours
Humanities elective.....	4 hours

Senior year

Electrical Engineering 356, 374, 411, 431, 433, 434, 441, 443, 445, 461 electives....	32 hours
Humanities electives.....	8 hours
Science elective.....	3 or 4 hours
Elective.....	3 or 4 hours

Total.....192 hours

Electrical Engineering Courses

circuits. Three lecture hours and one two-hour quiz session per week. Prerequisites: Ph 200 for EE 251; EE 251 for 253; EE 253 for 255.

EE 256 Electric Circuits Laboratory **2 credits**
Experiments on material of EE 251 and EE 253. One lecture and one four-hour laboratory per week. Prerequisite: EE 253.

EE 251 Electric Circuits I	4 credits
EE 253 Electric Circuits II	4 credits
EE 255 Electric Circuits III	4 credits

Fundamental concepts and units; energy and power; Kirchoff's laws; nodal and mesh analysis; steady-state solutions; coupled circuits and transformers; Fourier series and integral; transient response and Laplace transformation; polyphase

- EE 311 Seminar** **0 credits**
Attendance required for junior year Electrical Engineering students.
- EE 321 Linear Systems I** **3 credits**
Laplace transform techniques; functions in the complex frequency plane; analytic functions; the complex inversion integral; expansion of functions in series; inversion integral evaluation by residues; conformal field mapping. Three lecture hours per week. Prerequisite: Mt 241. Corequisite: EE 255.
- EE 323 Linear Systems II** **4 credits**
Application of the frequency plane analysis to electronic networks and filter networks; introduction to non-linear analysis; introduction to network synthesis. Three lecture hours and one two-hour quiz session per week. Prerequisite: EE 321.
- EE 351 Elementary Electromagnetic Fields** **3 credits**
Vector analysis; Gauss' theorem; curl; Stokes' theorem; scalar potential; vector potential; the electrostatic field; electric current; the magnetic field; Maxwell's hypothesis; plane waves. Three lecture hours and one two-hour quiz session per week. Prerequisites: Ph 201, Mt 232.
- EE 353 Electromagnetic Fields and Lines** **4 credits**
Lumped circuit and field concepts; quasi-static fields and distributed circuits; steady-state waves on lossless transmission lines; transient waves on lossless transmission lines; traveling waves on dissipative transmission lines. Three lecture hours per week. Prerequisites: EE 321, 351.
- EE 355 Advanced Electromagnetic Fields** **4 credits**
Natural oscillations; standing waves; resonance; waves in lossless media; waves in dissipative media; guided waves; elements of radiation. Three lecture hours and one two-hour quiz session per week. Prerequisite: EE 353.
- EE 356 Electromagnetic Fields Laboratory** **2 credits**
Experiments on material of EE 351, EE 353 and EE 355. One lecture and one four-hour laboratory per week. Prerequisite: EE 355.
- EE 361 Special Studies in Electrical Engineering** **1-3 credits**
Special studies for qualified students, under the direction of a faculty member. A written report will be required. By arrangement with the department.
- EE 374 Basic Electronics Laboratory** **2 credits**
Laboratory problems based on characteristics of fundamental electron devices and simple amplifier and rectifier circuits. One lecture and one four-hour laboratory per week. Prerequisite: EE 256.
- EE 375 Electrical Engineering Materials** **4 credits**
Dielectric and magnetic materials; frequency characteristics, losses, linear, non-linear effects, thermal properties, breakdown characteristics, hysteresis, piezo-electric and magnetostrictive properties. Devices; energy storage elements and converters, saturable memory elements, timing devices. Semiconductor devices; junction and diffusion capacitances, thermal, radiation, frequency effects, avalanche, Zener, punch-through breakdown. Diode, transistor, multilayer devices, integrated circuit characteristics and construction techniques. Prerequisite: Ph 361.
- EE 411 Seminar** **2 credits**
Each student is required to prepare a technical paper and to present it orally to the class. Prerequisite: Senior standing in Electrical Engineering.
- EE 424 Advanced Electronics Laboratory** **2 credits**
Laboratory problems demonstrating applications of electron devices in tuned and broadband amplifiers, power amplifiers, oscillators; sweep generators and multivibrators. One lecture and one four-hour laboratory per week. Prerequisites: EE 441, 443.
- EE 431 Electromechanical Energy Conversion I** **4 credits**
- EE 433 Electromechanical Energy Conversion II** **4 credits**
Electromechanical energy conversion principles; transformers, rotating machines, electromechanical energy conversion devices such as electro-magnets, loud speakers. Three lectures and one two-hour quiz session each week. Prerequisites: EE 323, ME 281; EE 431 for 433.
- EE 434 Electromechanical Energy Conversion Laboratory** **2 credits**
Experiments based on material of EE 431 and EE 433. One lecture and one four-hour laboratory per week. Corequisite: EE 433.
- EE 441 Semiconductor Circuits I** **4 credits**
Linear equivalent circuit models of solid state and vacuum circuit elements. Elementary amplifiers; biasing techniques, thermal stability, s-plane frequency characteristics, frequency compensation, coupling and bypassing circuits. Cascaded amplifier circuits; gain-frequency characteristics and bandwidth control. Prerequisite: EE 375.
- EE 443 Semiconductor Circuits II** **4 credits**
Linear power amplifiers; push-pull, complementary symmetry and load coupling circuits. Feedback amplifiers; gain-frequency characteristics and frequency compensation. Class AB, C and C amplifiers and tuned amplifiers. Oscillators; various basic forms and their frequency and amplitude stability characteristics. Prerequisite: EE 441.
- EE 445 Digital Systems** **3 credits**
Boolean algebra, logical reduction of combinatorial and sequential circuits, Vetch diagrams, Karnaugh maps; number systems and codes; logical circuits, basic counting, timing and authentic circuits; wave shaping, limiting, clipping, gating and dc-restoring circuits; memory devices. Prerequisite: EE 443.
- EE 461 Control Systems** **3 credits**
Analysis and design of closed-loop control systems with emphasis on stability and transient response using Nyquist, Bode and s-plane analysis. Three lecture hours per week. Prerequisites: EE 323, 433, 434.
- EE 462 Systems Laboratory** **2 credits**
A comprehensive systems laboratory utilizing components from electronics, energy conversion devices, filters and magnetics; emphasis on integration of components into a complete system. One lecture and one four-hour laboratory per week. Prerequisites: EE 374, 443 and 461 (concurrently).
- EE 481 Solid State Theory** **4 credits**
Review of elementary quantum physics; energy bands and carrier statistics; theory of junction devices; periodic structures and energy bands; transport theory; semiconductor parameters. Three lecture and one two-hour quiz session per week. Prerequisites: EE 355, 443.

- EE 483 Non-Linear Analysis** 4 credits
An introductory course treating numerical, graphical and analytical solutions; analysis of singular points, differential-difference equations. Three lecture and one two-hour quiz session per week. Prerequisites: EE 321, Mt 241.
- EE 485 Modulation and Noise** 4 credits
Signal transmission through electrical networks; amplitude modulation; phase modulation; frequency modulation; periodic sampling and pulse modulation; characterization of noise; noise sources; effects of noise on electronic systems; comparative analysis of information transmission systems. Three lecture and one two-hour quiz session per week. Prerequisites: EE 321, 443.
- EE 487 Pulse and Digital Circuits** 4 credits
Relationships between pulse shape and transmission characteristics of systems; pulse amplifiers and shapers; timing circuits; counters and registers; Boolean Algebra; digital computer circuits; memory devices. Three lecture and one two-hour quiz session per week. Prerequisite: EE 445.
- EE 489 Special Topics** 1-4 credits
EE 490 Special Topics 1-4 credits
Current topics in Electrical Engineering not normally covered in the undergraduate curriculum. Prerequisite: Senior standing.

Graduate Courses

- EE 501 Control Systems I** 3 credits
EE 502 Control Systems II 3 credits
EE 503 Control Systems III 3 credits
(I) Analysis and design of linear systems; a review of mathematical tools including Laplace transforms, block diagrams and signal flow graphs; performance criteria; stability criteria including Nyquist, Bode, s-plane and root locus methods; statistical design. (II) Statistical design; nonlinear system analysis and design including describing functions, phase-plane and state-space methods. (III) Sampled-data systems and z-transform theory; an introduction to optimal and adaptive systems. Prerequisites: EE 323 and 461 or equivalent, for 501; 501 for 502; 502 for 503.
- EE 507 Introduction to Engineering Analysis** 3 credits
Matrices, determinants, integral solution of boundary value problems, approximate evaluation of integrals, sampling theorem, introduction to probability; set theory, set functions, probability measure, probability distributions, joint and conditional probability, random variables and functions, error analysis in engineering measurements. Prerequisite: Mt 461 or permission.
- EE 508 Engineering Analysis II** 3 credits
Spectral analysis, correlation, autocorrelation, moments and statistical averaging, characteristic functions, noise generation in electronic components, treatment of noise in electronic systems, fundamental concepts of information transmission, Shannon's theorem and channel capacity. Prerequisite: EE 507.
- EE 511 Advanced Networks** 3 credits
Basic network analysis concepts: matrix representation of network functions for n-port and n-terminal networks, terminated and combined networks, basic network topology and solution techniques, recognition and synthesis of simple driving-point functions. Prerequisite: Graduate standing.
- EE 512 Network Synthesis I** 3 credits
Fundamentals of network synthesis; mathematical techniques of synthesis, positive real functions and matrices, realizability conditions, realization of driving-point functions for two-element-kind networks. Prerequisite: Graduate status.
- EE 513 Network Synthesis II** 3 credits
Synthesis of general driving-point functions; methods of approximation, Butterworth, Bessel, Chebyshev polynomials applied to filter design; transfer function synthesis, elements of time-domain synthesis. Prerequisite: EE 512.
- EE 514 Active Network Synthesis** 3 credits
Basic theoretical active and non-reciprocal elements, properties of linear active networks. Synthesis of one-port and two-port RC active networks employing controlled sources, negative-impedance converters or negative resistors and gyrators. Prerequisite: EE 513.
- EE 515 Physical Electronics I** 3 credits
Atomic structure and introduction to quantum mechanics, electronic conduction in solids, electron emission, semi-conductor devices, conduction in vacuum and gas, plasmas and media breakdown. Prerequisite: Graduate standing.
- EE 516 Physical Electronics II** 3 credits
Dielectric and optical properties of insulators, ferroelectrics, diamagnetism, paramagnetism, ferromagnetism, antiferromagnetism, ferrimagnetism, relaxation and resonance phenomena. Prerequisite: EE 515 or permission.
- EE 517 Electromagnetic Fields** 3 credits
Fundamental concepts: Maxwell's equations, generalized currents, energy and power, circuit concepts and elements, boundary conditions. Wave theory: scalar wave equation, waves in dielectrics and conductors, boundary effects, waveguide and resonator concepts, radiation and antenna concepts. Fundamental source theorems and uniqueness concepts. Construction of solutions by generating function techniques, applications in different geometries.
- EE 521 Mathematical Techniques of Electromagnetic Theory I** 3 credits
EE 522 Mathematical Techniques of Electromagnetic Theory II 3 credits
Problems selected from areas of propagation and diffraction of electromagnetic waves of current interest. Wiener-Hopf technique, asymptotic forms, the Sommerfeld problem of the radiation from a short dipole over a conducting earth. Prerequisite: EE 517 for 521; 521 for 522.
- EE 523 Mathematical Techniques of Electromagnetic Theory III** 3 credits
Seminar on mathematical papers in electromagnetic theory in the recent literature which employ modern techniques. Prerequisite: EE 522.
- EE 526 Wave Generation and Shaping** 3 credits
Analysis of active circuits which contain energy storage and significant non-linearities. Applications selected from various circuit design problems as diode wave shaping, logic gates, timing and sweep circuits, memory elements, and oscillators. Emphasis on techniques that are useful for a variety of active elements, vacuum tubes, transistors, various semi-conductor diodes, controlled rectifiers while also considering device limitations. Prerequisite: Graduate standing.

- EE 532 The Theory of Random Signals and Noise** 3 credits
Treatment of smoothing and prediction in optimum linear systems, least-mean-square error criterion, maximizing of signal-to-noise ratio, matched filters, envelope detectors, square-law detectors and optimum time-variable filters. Prerequisite: EE 508.
- EE 535 The Statistical Theory of Signal Detection** 3 credits
A review of basic concepts associated with filters, signals and noise; statistical detection of signals of known phase and arrival time; investigation of detection of signals of random phase and arrival time. Concepts of false alarm rate, multiple observation, maximum likelihood ratio, Bayes criterion, Neyman-Bearson criterion and theory of estimation. Prerequisites: Elementary network theory and Mt 462 or equivalent.
- EE 541 Microwave Circuits and Techniques** 3 credits
Microwave circuit theory developed from transmission line viewpoint. Waveguide discontinuities and equivalent circuits, ferrites and crystals as circuit elements. Mathematical techniques, Green's function, variational principle, Ritz method and perturbation developed as they arise. Prerequisite: EE 517.
- EE 543 Antennas and Radio Wave Propagation** 3 credits
Basic properties of antennas and linear arrays, radio propagation in plasma and atmosphere. Fresnel integrals, saddle point and stationary phase methods. Prerequisite: EE 541.

- EE 545 Microwave Electronics** 3 credits
Electron devices at microwave frequencies; formation and control of electron beams and interaction with time-varying fields, space charge waves, traveling-wave interactions in one-dimensional systems. Basic concepts of klystron and traveling-wave devices. Prerequisite: Graduate standing.
- EE 547 Measurements Laboratory** 3 credits
Selected laboratory problems to illustrate quantitative techniques and precision in electrical measurements with particular emphasis on microwave frequencies. One three-hour laboratory and one and one-half lecture hours per week. Prerequisite: Graduate standing.
- EE 580 Special Studies in Electrical Engineering** 3 credits
- EE 581 Special Studies in Electrical Engineering** 3 credits
Special studies under the direction of a faculty member, for which academic credit may properly be granted. By arrangement.
- EE 582 Special Studies in Electrical Engineering** 3 credits
Special studies under direction of a faculty member. Master candidates who are not writing a thesis must register for this course and submit an acceptable paper.
- EE 590 Master's Thesis** 3, 4 or 10 credits
Research in electrical engineering culminating in the writing of a thesis. Prerequisite: Admission to candidacy for degree M.S. in E.E.

Mechanical Engineering

Harry Majors, Jr., M.S., *Chairman*

Departmental Requirements

BACHELOR OF MECHANICAL ENGINEERING—In this program a total of 192 hours is required for the degree. In special cases, qualified students with the approval of the major department may substitute equivalent or more advanced courses for those listed in the curriculum.

NUCLEAR ENGINEERING OPTION—Students who desire to work in the field of nuclear engineering or to pursue graduate study in that area may with the permission of the department chairman substitute appropriate undergraduate courses in physics for some of the required mechanical engineering courses.

MASTER OF SCIENCE IN MECHANICAL ENGINEERING—Graduate students in mechanical engineering will find specific requirements in the introductory section of the School of Engineering and also under the Graduate School.

MASTER OF SCIENCE IN ENGINEERING—Students may elect to follow a program leading to the Master of Science in Engineering as distinct from the Master of Science in electrical or mechanical engineering. The candidate for the Master of Science in Engineering will be permitted greater freedom

Objectives

The mechanical engineer is concerned with the fundamental properties of solids, liquids and gases related to the creative design and manufacture of machines, heat engines, electro-mechanical devices and control systems. He is concerned with the broad area of energy conversion as related to the design of machines. This requires working with the processes of combustion, nuclear and chemical reactions, solar radiations, propulsion systems for sea, land and space and all types of materials under a vast array of conditions.

A mechanical engineer may enter positions in research and development, design engineering, salesmanship, and, with experience, executive positions in industry.

Degrees Offered

Bachelor of Mechanical Engineering
Master of Science in Engineering (evening classes only)
Master of Science in Mechanical Engineering (evening classes only)

General Program Requirements

Students in mechanical engineering must satisfy core curriculum requirements of the University as modified for the School of Engineering. See description on page 98 under School of Engineering.

in the choice of courses required for the degree than allowed to those seeking electrical or mechanical engineering degrees. It is anticipated this more general program will be of interest to civil, electrical and mechanical engineers.

Bachelor of Mechanical Engineering

Freshman year

English 100, 160.....	8 credits
Mathematics 131, 132, 133.....	12 credits
Mechanical Engineering 100, 110, 111, 112..	9 credits
Philosophy 125, 150.....	8 credits
Physics 200.....	5 credits
Theology 120.....	4 credits

Sophomore year

Civil Engineering 221.....	4 credits
Electrical Engineering 251.....	4 credits
Mathematics 237, 238, 241.....	12 credits

Mechanical Engineering 269, 270, 271, 281, 291.....	13 credits
Philosophy 225.....	4 credits
Physics 201, 202.....	10 credits
Theology 320.....	4 credits

Junior year

Chemistry 314, 315.....	8 credits
Civil Engineering 323, 331, 333.....	10 credits
Economics 271.....	4 credits
Electrical Engineering 253, 256.....	6 credits
Mathematics 114.....	3 credits
Mechanical Engineering 321, 322, 371, 380, 398.....	15 credits
Theology core elective.....	4 credits

Senior year

Mechanical Engineering 426, 430, 472, 496, 497, 498.....	18 credits
Humanities electives.....	12 credits
Technical electives.....	15-19 credits

Total.....192-196 credits

Mechanical Engineering Courses

- ME 100 Logarithms and Slide Rule** 0 credit
Review of exponents and logarithms. Separate sections on slide rule and logarithmic computation. Students must attend these sessions until they are able to pass examinations on the subjects concerned. Hours arranged.
- ME 110 Engineering Problems** 3 credits
Presentation of engineering papers. Dimensional analysis. Handling of data. Vector algebra. Free body diagrams; static equilibrium. Engineering reports. Three lectures and two one-hour problem sessions per week.
- ME 111 Engineering Drawing** 3 credits
Use of instruments, lettering, orthographics, isometrics, free-hand sketching, dimensioning. Introduction to descriptive geometry. Three two-hour sessions per week.
- ME 112 Engineering Graphics and Design** 3 credits
Graphical calculus. AVS diagrams; graphs and diagrams; nomograms.
- ME 269 Production Processes I** 1 credit
ME 270 Production Processes II 1 credit
A study of the processes used in forming and shaping engineering materials; lectures, demonstrations and laboratory work on machining processes. One lecture and three laboratory hours per week. Prerequisite: Sophomore standing, ME 269 for 270.
- ME 271 Mechanics I, Statics** 4 credits
Principles of statics with application to elementary machine design and structural problems; composition and resolution of force systems; theory of static equilibrium, work-energy methods; principle of virtual work; mass centers, centers of gravity and centroids; area moments and products of inertia; Mohr's circle; applications to fluid statics, friction in machine elements, trusses and beams; introduction to deformable bodies; methods of vector algebra. Three lectures and one two-hour problem session per week. Prerequisites: ME 112, Ph 200. Corequisite: Mt 231.
- ME 281 Mechanics II, Dynamics** 4 credits
Principles of dynamics; the kinematics and kinetics

of a particle, system of particles and rigid bodies; relative motion, the equations of motion, impulse-momentum and work-energy; conservative force fields and potential energy; the inertia tensor, principal axes and moments of inertia; Euler's equations of motion of a rigid body, Euler's angles, Lagrange's equations; methods of vector calculus. Applications will be drawn from mechanical vibrations planetary and satellite motion, rocket and jet propulsion and the symmetrical gyroscope. Three lecture and one two-hour problem session per week. Prerequisite: ME 271. Corequisite: Mt 232.

- ME 291 Mechanics III, Dynamical Analysis** 3 credits
Application of first principles of the kinematic analysis of mechanisms and the dynamic analysis of machines; rolling and sliding bodies in contact, mechanism trains, linkages and principles of dynamic balancing; introduction to kinematic synthesis. Three lectures per week. Prerequisite: ME 281. Corequisite: Mt 341.
- ME 321 Engineering Thermodynamics I** 4 credits
Heat, work, the laws of thermodynamics; entropy and absolute temperature; properties of liquids, vapors, perfect gases and mixtures of gases and vapors; application to heat cycles. Four lecture hours per week. Prerequisites: CE 331, Mt 341, Ph 202.
- ME 322 Engineering Thermodynamics II** 4 credits
Equations of state, thermodynamic relations, study of processes and cycles; flow of fluids, heat transfer, chemical reactions, combustion, equilibrium. Four lecture hours per week. Prerequisite: ME 322.
- ME 371 Machine Design I** 4 credits
Relation of engineering fundamentals and properties of materials to the design, layout and details of specific machines; computation techniques and use of digital and analogue computers. Four lecture hours per week. Prerequisites: ME 291, CE 323, 333.

ME 380 Heat and Mass Transfer I 3 credits
Introduction to the theory of heat flow by conduction; convection and radiation; dimensional analysis. Three lecture hours per week. Prerequisites: ME 321, CE 333.

ME 398 Seminar 0 credit
Students will attend. Seminar papers will be presented by the seniors.

ME 425 Power Plants I 4 credits
Application of thermodynamic theory and heat transfer to the economic design of modern central station power plants and auxiliaries. Three lecture and four laboratory hours per week. Prerequisites: ME 322, 380.

ME 426 Power Plants II 4 credits
Thermodynamic analysis of internal combustion engines and rotating machinery. Three lecture and four laboratory hours per week. Prerequisites: ME 322, 380.

ME 427 Power Plants III 4 credits
Propulsion systems. Three lecture and four laboratory hours per week. Prerequisite: ME 426.

ME 428 Environmental Engineering 4 credits
Man-machine systems; psychological and physiological principles of the interrelation between a human and his surroundings; environmental requirements for equipment and human habitation; engineer's approach to the multi-disciplinary aspects of environmental control. Three lecture and four laboratory hours per week. Prerequisite: ME 426.

ME 430 Principles of the Properties of Materials I 3 credits

ME 431 Principles of the Properties of Materials II 3 credits
Atomic structure of elements. The metallic bond. Structure of metals and non-metals. Equilibrium diagrams. Time-dependent transformations. Elastic and plastic deformations. Relation of structure to properties.

ME 472 Machine Design II 4 credits
Emphasis upon philosophy of design, a creative approach, and a comprehensive design project. An introduction to other aspects of design such as planning, organizing, leading an engineering project, exercising judgment and considering economic factors. Prerequisite: ME 371.

ME 473 Machine Design III 4 credits
Instruction and experience in the integrated aspects of creative design and analysis; case studies; design of a novel device or systems; electro-mechanical systems; hydraulic and pneumatic systems; energy conversion. Prerequisite: ME 472.

ME 474 Machine Design IV 4 credits
Project work. Prerequisite: ME 473.

ME 477 Experimental Mechanics 3 credits
Study of experimental methods; instrumentation; use of sensing devices; measurements by means of mechanical, electrical, magnetic and optical methods; control systems; vibrations; shock and impact measurements; emphasis on the interpretation of results. Two lecture and four laboratory hours per week. Prerequisites: CE 333, ME 371.

ME 478 Compressible Flow I 3 credits
Review of concepts of fluid dynamics and thermodynamics; introduction to the concepts of compressible flow; one-dimensional gas dynamics in-

cluding flow in nozzles and diffusers, normal shocks, frictional flows and flows with heat transfer and energy release. Three lecture hours per week. Prerequisites: CE 333, ME 322.

ME 479 Theoretical Hydrodynamics 3 credits
Ideal fluid motions; Euler's equation of motion and continuity equation, boundary conditions. Potential flow; velocity potential, stream function, Laplace equation, hydrodynamic singularities, two and three dimensional flow examples. Conformal transformation; complex potential, complex velocity, Blasius theorem, flow about cylinders and air foils. Free streamline flow; Schwartz-Christoffel theorem. Vortex motion.

ME 481 Heat and Mass Transfer II 4 credits
Use of analogue and digital computer; numerical methods; mass transfer; diffusion. Three lecture and four laboratory hours per week. Prerequisite: ME 380.

ME 484 Linear Systems Analysis 4 credits
Application of Laplace transforms to linear systems. Three lecture and four laboratory hours per week. Prerequisites: ME 322, 371, CE 333.

ME 485 Control Systems I 4 credits
Analysis and design of linear control systems with emphasis on transient and frequency response. Three lecture and four laboratory hours per week. Prerequisite: ME 484.

ME 491 Special Studies in Mechanical Engineering 2-4 credits

ME 492 Special Studies in Mechanical Engineering 2-4 credits

ME 493 Special Studies in Mechanical Engineering 2-4 credits
Selected subjects of current interest in mechanical engineering. Assigned reading and/or experiments will be arranged on an individual basis in consultation with the instructor. Written report and oral delivery are required. Prerequisite: Senior standing.

ME 496 Seminar 1 credit

ME 497 Seminar 1 credit

ME 498 Seminar 1 credit
Prerequisite: Senior standing.

ME 499 Thesis 2 credits
In special cases a thesis may be substituted in place of seminar with the approval of the department chairman. Prerequisite: Senior standing.

Graduate Courses

ME 521 Advanced Fluid Mechanics I 3 credits
Incompressible flow; continuity and equations of motion; irrotationality; velocity potential and stream function; sources, sinks, vortex flow; speed of sound. Prerequisites: Graduate standing and an undergraduate course in Fluid Mechanics (such as CE 331).

ME 522 Advanced Fluid Mechanics II 3 credits
Compressible flow continued; one-dimensional flow; wave propagation; oblique shock waves; flow in ducts and wind tunnels; two-dimensional flow; small-perturbation theory; airfoils; Prandtl-Glauret rules. Prerequisite: ME 521.

- ME 523 Advanced Fluid Mechanics III** 3 credits
Topics in two-dimensional compressible flow; methods of characteristics; effects of friction and conductivity; boundary layer theory; unsteady flow. Prerequisite: ME 522.
- ME 531 Elasticity and Mechanics of Materials I** 3 credits
Mathematical theory of elasticity; stress and strain tensor; Hooke's generalized law; experimental techniques; stress concentration; strain energy methods.
- ME 532 Elasticity and Mechanics of Materials II** 3 credits
Applications of theory to beams, wedges, disks and curved bars; photo-elasticity; strain energy methods; rotating parts. Prerequisite: ME 531.
- ME 533 Elasticity and Mechanics of Materials III** 3 credits
Failure theories; brittle fracture; introduction to the laws of plasticity; comparison of plasticity theory with elasticity; introduction to elastic stability. Prerequisite: ME 532.
- ME 534 Elasticity and Mechanics of Materials IV** 3 credits
Elastic theory and stability of beams, columns, plates and shells; dynamic loads on structures. Prerequisite: ME 533.
- ME 535 Elasticity and Mechanics of Materials V** 3 credits
Plastic buckling; numerical methods. Prerequisite: ME 534.
- ME 541 Heat Transfer I** 3 credits
- ME 542 Heat Transfer II** 3 credits
Mathematical theory of heat conduction in one, two and three dimensions; unsteady state; fundamentals of convection; heat transfer by radiation. Prerequisites: ME 523 for 541, 541 for 542.
- ME 543 Heat Transfer III** 3 credits
Heat transfer with change in phase; interrelationship between flow of heat and fluids; mass transfer; extreme temperatures and pressures; high-speed air flow. Prerequisite: ME 542.
- ME 551 Thermodynamics I** 3 credits
Review of thermodynamic relations; kinetic theory of an ideal gas; distribution of molecular velocities;

introduction to statistical thermodynamics; probability. Prerequisite: Graduate standing and undergraduate courses in Fluid Mechanics and Thermodynamics.

- ME 552 Thermodynamics II** 3 credits
Maxwell-Boltzman statistics; quantum mechanics and statistics; partition functions and relationship to thermodynamic properties. Prerequisite: ME 551.
- ME 553 Thermodynamics III** 3 credits
Spectroscopic measurements; specific heat of gases; compressed gases and liquids; the solid phase; chemical systems; fluctuations; irreversible processes. Prerequisite: ME 552.
- ME 561 Dynamics I** 3 credits
Review of the foundations of classical mechanics; Hamilton's principle; Lagrange's equation of motion; vibration problems in engineering; numerical procedures.
- ME 562 Dynamics II** 3 credits
Vibration problem in engineering; gyroscopic action; equivalent systems; theory of measurements; numerical procedures. Prerequisite: ME 561.
- ME 563 Dynamics III** 3 credits
Propagation of waves in solids; instrumentation for studies in dynamics; numerical procedures; non-linear systems. Prerequisite: ME 562.
- ME 580 Special Studies in Mechanical Engineering** 1-3 credits
- ME 581 Special Studies in Mechanical Engineering** 1-3 credits
Special studies, under the direction of a faculty member, for which academic credit may be properly granted. By arrangement.
- ME 582 Special Studies in Mechanical Engineering** 3 credits
Special studies under direction of a faculty member. Master's degree candidates who are not writing a thesis must register for this course and submit an acceptable paper.
- ME 590 Master's Thesis** 3, 4 or 10 credits
Research in mechanical engineering or applied mechanics culminating in the writing of a thesis. Prerequisite: Admission to candidacy for the Master of Science in Mechanical Engineering.





NURSING

School of Nursing

Eileen M. Ridgway, Ph.D., *Dean*

Objectives

The aim of Seattle University's School of Nursing is to provide the educational preparation for the professional nurse who appreciates both the heritage and responsibilities in nursing and her role in the community; is able to apply to patient care the basic facts and principles of the humanities, the natural and social sciences and upholds the ethical principles of Christianity; is able to assume nursing responsibility for the promotion, maintenance and restoration of health.

Accreditation

National League for Nursing

Organization

The School of Nursing is formally organized within the University structure but is under the direction of its own dean and has a separate faculty. The School is a distinct and independent degree recommending unit responsible directly to the Academic Vice President of the University.

Admission Requirements

All entering freshman, transfer students from accredited institutions of higher learning and registered nurses who wish to complete requirements for the Bachelor of Science degree in Nursing must meet University entrance requirements described in the admissions section of this bulletin. Additional requirements for registered nurses are:

- Graduation from an approved school of professional nursing
- Current nursing licensure in at least one State or Canadian Province
- Report of complete physical examination within six months before entrance

Degree Offered

Bachelor of Science in Nursing

Curriculum

The baccalaureate degree program is designed for high school graduates and registered nurses who wish to complete requirements for the degree. The program is planned to provide the student with a foundation in the liberal arts and nursing, to stimulate her to assume responsibility for self-directed education and professional development, and as a basis for graduate education and research.

Clinical experience is provided through cooperating teaching units which include Providence Hospital,

Veterans Administration Hospital, Public Health Service Hospital, Children's Orthopedic Hospital, Northwest Hospital and Overlake Memorial Hospital. Community nursing practice is provided through selected health agencies. The professional portion of the curriculum includes study in the four major areas of nursing, which are: medical-surgical, maternal-child, psychiatric and community health nursing.

General Program Requirements

Students in the School of Nursing must satisfy core curriculum requirements of the University given on page 24 of this bulletin. For additional required sequences see the program of study which follows.

A student in the School of Nursing must have achieved a cumulative grade point average of 2.25 or above by the end of the sophomore year, and a 2.0 in the Basic Nursing courses, for approval to proceed into the upper division nursing courses.

Living expenses and cost of laboratory tests, X-rays, medications, surgery and hospitalization are the responsibility of the student throughout the program. Transportation costs to, from and while in cooperating teaching units are the responsibility of the student. A current driver's license and car (covered by insurance as prescribed by the state law) are required for community health nursing.

Bachelor of Science in Nursing

Freshman year

Chemistry 101, 102	8 hours
English 100, 160, 170 or 180 or 190	12 hours
History 102 and core elective	8 hours
Philosophy 125, 150, 175	12 hours
Theology 120	4 hours
Sociology 101	4 hours

Sophomore year

Biology 200, 210, 220	12 hours
Nursing 205, 206, 207	10 hours
Philosophy 225	4 hours
Psychology 100	4 hours
Theology 220, 320 and core elective	12 hours
Elective	4 hours

Junior year

Nursing 325, 330, 331, 332, 333, 340, 341, 342, 343	52 hours
Philosophy 250	4 hours
Psychology 322	4 hours

Senior year

Nursing 350, 351, 415, 416, 440, 441, 450, 451	38 hours
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Total 192 hours

Nursing Courses

- N 205 Basic Nursing I 4 credits**
N 206 Basic Nursing II 4 credits
 Sequential courses in the beginning study of the role of the nurse in a variety of settings. Organized on the concepts of nursing, interpersonal relationships, wellness-illness, comfort-discomfort and mobility-immobility. Supervised experience provides an opportunity to begin application of concepts and performance of skills.
- N 207 Elementary Pharmacology 2 credits**
 Study of basic concepts and principles related to pharmacology and drug therapy in nursing. Prototypes of drugs basic to a wide variety of circumstances are discussed.
- N 325 Public Health Organizations and Programs 4 credits**
 Study of the fundamental concepts of health and the control of disease as applied to communities, and of the governmental and other organizations and programs, from local to international levels, designed to apply these concepts.
- N 330 Medical-Surgical Nursing I 6 credits**
N 331 Practicum in Medical-Surgical Nursing I 6 credits
 Study of selected health problems with emphasis on pathological phenomena and related nursing problems. Includes directed experience in application of theory in planning and implementing nursing care for selected patients.
- N 332 Medical-Surgical Nursing II 4 credits**
N 333 Practicum in Medical-Surgical Nursing II 8 credits
 Study of selected health problems with emphasis on complex pathological phenomena and related nursing problems. Includes directed experience in application of theory in planning, implementing and evaluating care of selected patients.
- N 340 Maternal-Child Nursing I 6 credits**
N 341 Practicum in Maternal-Child Nursing I 6 credits
 Study of the family in all phases of the reproductive cycle in health and illness. Includes selected experience in observing and caring for mothers and children in the hospital, home and community.
- N 342 Maternal-Child Nursing II 6 credits**
N 343 Practicum in Maternal-Child Nursing II 6 credits
 Study of the family in all phases of the reproductive cycle in health and illness. Includes selected experience in observing and caring for mothers and children in the hospital, home and community.
- N 350 Psychiatric Nursing 6 credits**
N 351 Practicum in Psychiatric Nursing 6 credits
 Study of psychodynamics, psychopathology and group interaction in relation to the nursing care of psychiatric patients. Includes clinical experience in care of psychiatric patients.
- N 406 Family-Community Nursing Seminar 4 credits**
 A study of family and community health problems and appropriate nursing intervention.
- N 412 Scientific Principles in Nursing Care 3 credits**
 An undergraduate seminar devoted to a critical analysis of nursing situations with emphasis on the identification and utilization of the inherent social and natural science principles.
- N 415 Community Health Nursing Principles 3 credits**
 Concepts and principles of public health nursing used in analyzing and implementing health programs in family and community settings.
- N 416 Community Health Nursing Practice 5 credits**
 Application of public health nursing principles and skills in family and community health situations. Problem solving and interpersonal relationship skills emphasized.
- N 425 Current Literature in Nursing 2 credits**
 Analysis of current literature and research findings related to a selected clinical area of interest.
- N 431 Special Topics in Nursing 2 credits**
N 440 Senior Seminar in Nursing 2 credits
 An interdisciplinary approach to contemporary thought affecting behavioral patterns in the nursing profession. Prerequisite: Senior status.
- N 441 Perspectives of Professional Nursing 4 credits**
 A study of historical development of professional nursing and an exploration of current trends in nursing and nursing education, including responsibilities of professional nurses in today's society. Prerequisite: Senior status.
- N 450 Advanced Nursing 4 credits**
N 451 Practicum in Advanced Nursing 8 credits
 The professional nurse's leadership role in the management of nursing care for groups of patients. Human relations, communication, problem solving and decision making processes are emphasized. Includes directed experience as a leader of the nursing team, in assessing, implementing and evaluating the nursing care of groups of patients.





The Graduate School

Louis Gaffney, S.J., Ph.D., *Dean*
James J. Cowgill, S.J., Ph.D., *Associate Dean*

Graduate studies directed toward the master's degree were first offered at Seattle University in 1901 in a division of its College of Arts and Sciences. In 1935 graduate courses became an integral part of the University's teaching education program. In the fall of 1958 Seattle University began a program of graduate study leading to the Master of Science degree in electrical or mechanical engineering for students in evening classes. A Master of Business Administration program was offered for the first time in the fall of 1967 in evening classes. The Graduate School is a separate school of the University with four divisions: arts and sciences, business, education and engineering. Courses offered in the College of Arts and Sciences include English, history and religious education. Programs in chemistry, mathematics and physics are sponsored by the National Science Foundation.

Objectives

Graduate School programs are not merely *more* courses in undergraduate study; they involve courses advancing by graduation into greater complexity and profundity. The content of graduate courses is of a more advanced nature, the requirements in terms of bibliography, quantity and quality of thinking and writing are higher, and the degree of initiative, the organizing ability and originality expected is greater. Only a limited number of undergraduate courses may be accepted for credit. Graduate students should not consider the mere literal fulfillment of requirements as conferring the right upon them to continued registration. Academic advancement and eligibility for degrees are contingent also upon recommendation and approval of the Graduate Council.

Organization

Administration of the Graduate School and supervision of all programs leading to the master's degree lies with the Dean of the Graduate School and the Graduate Council appointed by the President and directly responsible to the Academic Vice President. The Dean of the Graduate School and his Council establish and maintain requirements for degrees according to the recommendations of the Graduate Committee of each school of the University.

The component schools and various departments provide courses of instruction for graduate students, direct their studies, conduct examinations, maintain requirements and make recommendations. Academic transactions involving admission, registration and awarding of degrees are supervised by the University's Registrar. Actual admission to graduate study is granted through the Dean of the Graduate School in consultation with the appropriate department chairman involved in the counseling of the applicant.

Classification of Students

A graduate student is one who has been admitted to the Graduate School to pursue a program of study leading to a specific master's degree. Graduate students are classified as regular, on probation or visiting. A student admitted on probation must demonstrate in his first quarter ability to do work of graduate quality. A visiting graduate student may take graduate courses for a single quarter only. In special circumstances, an undergraduate senior or unclassified fifth year student may be allowed to attend a graduate course with prior approval of the instructor and the Dean of the Graduate School.

Students pursuing course work beyond the bachelor's degree, who are not admitted to the Graduate School for a specific advanced degree are granted status as unclassified fifth year students and are under the jurisdiction of the dean of the college in which they are taking courses. A student pursuing certification in education is not a graduate student unless in addition to this study supervised by the School of Education he has been accepted by the Graduate School in a master's degree program.

Admission Requirements

Admission to the degree program is granted to applicants who have received the bachelor's degree from an approved college or professional school, and whose scholarship records and credentials indicate ability to pursue graduate work. An undergraduate major and an undergraduate minor or their fair equivalents are required in the same departments or areas from which the student selects his graduate work.

Application for admission should be submitted as early as possible before the opening of the term in which the student wishes to begin his work. Prospective students must file an official application form and fee with the Office of Admissions. In addition, two official transcripts of academic credits from the institution granting the bachelor's degree and all schools attended since the undergraduate degree was granted are to be sent directly to Seattle University by each institution. Failure to file complete records of previous school attendance renders the student liable to dismissal or cancellation of credit. A student is not regarded as a duly qualified graduate student until he has received a letter of acceptance from the Dean of the Graduate School. For specific degree requirements, consult the graduate publications of the department concerned.

Foreign students who meet admission requirements, can demonstrate their English proficiency and are in the United States on a permanent visa will be considered for admission since no I-20 form is necessary.

Admission to Candidacy

Application for admission to candidacy should be filed after the student has completed from 10 to 20 credit hours in courses applicable to the graduate program of the department, with no grade of less than B in the major area. At this time he must file the complete Program of Studies and Candidacy form.

Degrees Offered

Graduate degrees offered by the University are:

ARTS AND SCIENCES

Master of Arts—English.

Master of Arts—History.

Master of Arts—Teaching—English.

Master of Religious Education (summer only)

Master of Science in Natural Science—A degree with no required research, especially designed for and restricted to high school teachers of science and mathematics (summer only).

BUSINESS

Master of Business Administration.

EDUCATION

Master of Arts in Education.

Master of Education.

These two degrees may be earned with specialization in the following areas: administration, curriculum development, guidance, and adult education administration.

ENGINEERING

Master of Engineering Science—(evening only).

Master of Science in Electrical Engineering—(evening only).

Master of Science in Mechanical Engineering—(evening only).

General Program Requirements

The candidate for the master's degree must present a minimum of 35 quarter hours of credit beyond the bachelor's degree. He must satisfy any additional requirements imposed by the major department and the Graduate Council.

All work must be of distinctly advanced character but, with the approval of the department and the Graduate Council, 15 credits in programs requiring only the minimum of 35 hours and 20 credits in those requiring 40 or more hours may be earned in courses numbered 300 to 499, if the subjects are suitable to the student's program. An exception to this rule is in the Master of Science in Natural Science degree which is a terminal degree program where no 300 numbered courses are acceptable, but the program may be made up of courses numbered 400 or above. A maximum of 10 quarter hours may be transferred from another institution if they are earned with a grade of "A" or "B" and approved by the department and Dean of the Graduate School.

Distribution of course work will be according to a program recommended by the department and approved by the Dean of the Graduate School.

Every candidate for a master's degree must take a comprehensive examination in the major field of study. This examination shall be written and/or oral at the judg-

ment of the department and the approval of the Graduate Council. A "B" average is required for work done toward the master's degree.

The student may be required to complete a thesis on a topic approved by his major department and the Graduate Council. For this work, no more than 10 quarter hours of credit are granted. The thesis is not necessarily a work of original research but it must, however, demonstrate the candidate's ability to collect facts, interpret them in a critical manner and organize and express them in an original, lucid way.

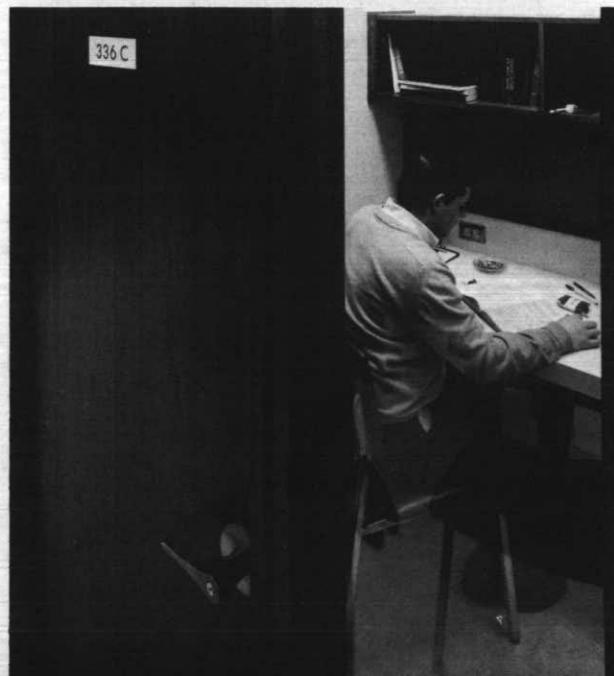
The topic of the thesis is to be approved by the student's mentor, graduate program adviser and the Dean of the Graduate School and filed with the Graduate School when 30 quarter hours of the graduate program have been completed.

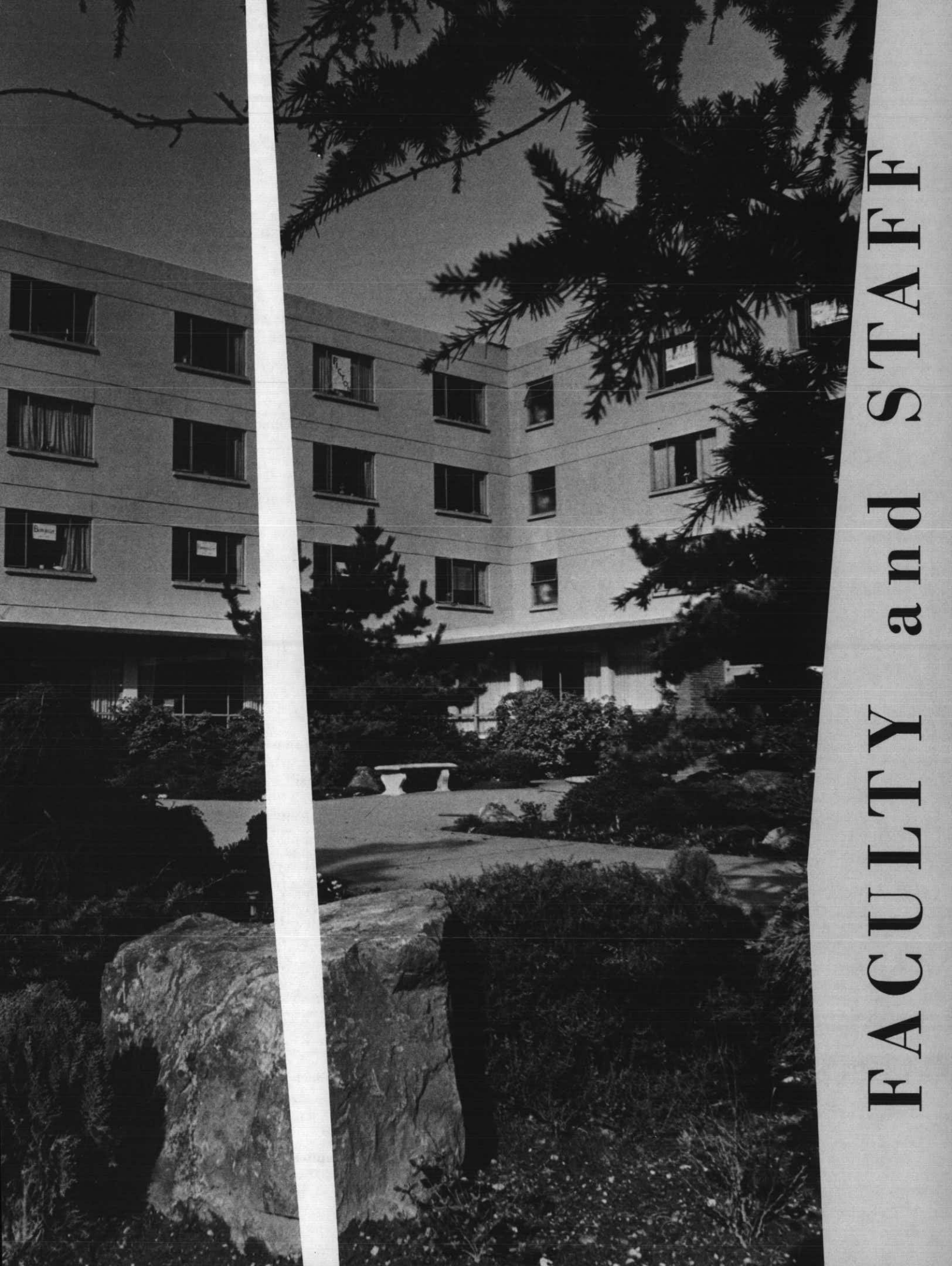
All thesis work must be done under the direct supervision of an assigned adviser.

Four unbound copies of the approved thesis are to be filed in the office of the dean four weeks before the date of graduation. Two of these copies will be bound and placed on file in the University's library; one copy will go to the department chairman and one copy to the student.

An oral examination on the content of the thesis, cognate literature and available source material may be held before a board appointed by the departmental chairman and approved by the Dean of the Graduate School.

All requirements for the Master's degree must be completed within 6 years after course work is begun, including the time of any courses for which the candidate applies for transfer of credit. The application for the degree must be filed with the University Registrar by February 15. Ordinarily each candidate for the Master of Arts degree will give evidence of a reading knowledge of a foreign language. Application for this examination must be made with the departmental office not later than April 15 preceding the June in which the degree is to be received. The Graduate School alone has the power to recommend a candidate for a Master's degree. All candidates for degrees must be present at the Commencement Exercises to receive their diplomas. Any exceptions must be obtained individually from the Academic Vice President.





FACULTY and STAFF



The University Administration

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Coos Bay, Oregon

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Architect, A.I.A.

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Chairman and President, Washington Natural Gas Co.

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*Vice President and General Manager,
Transport Division The Boeing Company*

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Academic Vice President

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Vice President for Finance and Business

Elliott A. Paulson, B.A.
Vice President for Development

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| <p>Robert I. Bradley, S.J., Ph.D.
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<i>Dean, School of Engineering</i></p> <p>Louis Gaffney, S.J., Ph.D.
<i>Dean, Graduate School</i></p> <p>Eileen M. Ridgway, Ph.D.
<i>Dean, School of Nursing</i></p> <p>James E. Royce, S.J., Ph.D.
<i>Associate Dean, College of Arts and Sciences</i></p> <p>Ralph K. O'Brien, Ed.D.
<i>Associate Dean, School of Education</i></p> <p>James J. Cowgill, S.J., Ph.D.
<i>Associate Dean, Graduate School and Director of Research and Institutional Development</i></p> <p>J. Thomas Page, Ph.D.
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<i>Assistant Vice President for Development</i></p> <p>George C. Towner, M.S., Vice Adm., U.S.N. (Ret.)
<i>Administrative Assistant to the President</i></p> <p>Joseph A. Maguire, S.J., M.A.
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<i>Dean of Women</i></p> <p>Patrick J. Kenny, S.J., M.A.
<i>Director of Student Activities</i></p> <p>Louis A. Sauvain, S.J., S.T.B.
<i>Assistant Chaplain</i></p> <p>J. Brian Cullerton, B.A.
<i>Director of Urban Affairs</i></p> <p>James D. La Cour, B.A.
<i>Youth Coordinator</i></p> | <p>Charles H. Mitchell, B.A.
<i>Director of Minority Student Affairs</i></p> <p>Mary M. Ridge, B.A.
<i>Director, Pre-Major Program</i></p> <p>Michael J. Dolan, M.A., Lt. Col., U.S.A. (Ret.)
<i>Director of Financial Aid and Director of Special Events</i></p> <p>Clair A. Marshall, S.J., M.S.
<i>Assistant Director of Financial Aid and Veterans Coordinator</i></p> <p>John R. Talevich, M.A.
<i>Director of Publications</i></p> <p>Edward J. O'Brien, B.C.S.
<i>Director of Athletics</i></p> <p>Leonard F. Sitter, S.J., M.Ed.
<i>Administrative Assistant, Archbishop Connolly Center</i></p> <p>Morris B. Buckwalter, B.A.
<i>Head Basketball Coach</i></p> <p>William A. Guppy, Ph.D.
<i>Director, Counseling and Testing Center</i></p> <p>George S. Town, M.S.
<i>Director, Computer Center</i></p> <p>David M. Irwin, B.C.S.
<i>Alumni Director</i></p> <p>Frederic A. Cordova, B.S.S.
<i>Director of Public Information</i></p> <p>David H. Thomas, B.S.
<i>University Editor</i></p> <p>Genevieve Weston, A.B.
<i>Director, University Bookstore</i></p> <p>Michael J. Schreck, B.C.S.
<i>Director, Physical Plant and General Services</i></p> <p>Jeremy W. Reed, B.S.
<i>Director of Systems</i></p> <p>Raymond L. Nichols, S.J., Ph.D.
<i>Superintendent of Grounds</i></p> <p>James D. Lynch, B.A.B.A.
<i>Assistant Director of Admissions for High School Relations</i></p> <p>Robert K. Lieding, J.D., Lt. Col., U.S.A. (Ret.)
<i>Assistant Director of Admissions for College Relations</i></p> <p>Patricia Young, B.A.
<i>Assistant Director of Financial Aid</i></p> <p>Charles P. Moriarty, Jr., LL.B.
<i>Legal Counsel</i></p> <p>James D. Layman, M.D.
<i>Medical Adviser</i></p> <p>Margaret W. Sullivan, B.A.
<i>Secretary of the University</i></p> <p>Dona Marie MacDonald, M.Ed.
<i>Assistant Dean of Women</i></p> |
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The University Faculty

The dates following faculty names indicate initial and subsequent appointments to the University faculty. Asterisks preceding names denote faculty members on leave of absence. Daggers (†) following names indicate Graduate School faculty members.

Clarence L. Abello, B.Econ. (1953)

Associate Professor of Spanish
B.Econ., 1933, University of London; Contador Publico Nacional, 1937, Universidad Nacional de Buenos Aires, Facultad de Ciencias Economicas.

Lois D. Aden, M.F.A. (1966)

Assistant Professor of Drama
A.B., 1953, Queens College; M.F.A., 1960, Yale University.

James R. Albers, Ph.D. (1962)†

Associate Professor of Physics
B.S., 1956, Washington State University; M.S., 1958, George Washington University; Ph.D., 1962, University of Washington.

Lewis E. Aldrich, Jr., Ph.D. (1968)†

Chairman, Biology Department
Associate Professor of Biology
B.A., 1950, Linfield College; M.S., 1954, Ph.D., 1960, Oregon State College.

William E. Armstrong, S.J., Ph.D. (1957)

Associate Professor of Modern Languages
A.B., 1944, M.A., 1945, Gonzaga University; S.T.L., 1952, Alma College; Diplome de l'Institut de Phonetique Francaise de la Sorbonne, Universite de Paris, 1954; Ph.D., 1955, Catholic University of Paris.

Engelbert M. Axer, S.J., Ph.D. (1941; 1955)

Associate Professor of Philosophy
A.B., 1930, Valkenburg, Holland; S.T.L., 1940, St. Louis University; M.A., 1941, Gonzaga University; Ph.D., 1949, Georgetown University.

Sister Diana Bader, O.P., Ph.D. (1961; 1967; 1969)

Associate Professor of Theology
B.Ed., 1957, Seattle University; Ph.D., 1961, St. Mary's College, Notre Dame.

Edward J. Baldinger, M.S. (1957)

Professor of Civil Engineering
B.S., 1940, Notre Dame University; M.S., 1951, University of Michigan; Registered Professional Engineer.

Mary C. Bartholet, M.S. (1958; 1965)

Associate Professor of Nursing
B.S., 1949, College of St. Teresa; M.S., 1958, St. Louis University

***Elbert M. Beamer, M.A. (1965)**

Instructor in Philosophy
B.A., 1952, University of Puget Sound; M.A., 1964, University of Washington.

Wendland Beezhold, Ph.D. (1964)

Assistant Professor of Physics
B.S., 1961, M.S., 1964, Ph.D., 1969, University of Washington.

Richard H. Berg, Ph.D. (1966)†

Associate Professor of Civil Engineering
B.S.C.E., 1959, M.S.C.E., 1961, University of Washington; Ph.D., 1965, Oregon State University.

Ernest P. Bertin, S.J., Ph.D. (1957)†

Professor of Chemistry
A.B., 1944, M.A., 1945, Gonzaga University; S.T.L., 1952, Alma College; Ph.D., 1957, University of Notre Dame.

William N. Bischoff, S.J., Ph.D. (1969)†

Professor of History
B.A., 1940, M.A., 1942, Gonzaga University; S.T.B., 1948, Alma College; Ph.D., 1950, Loyola University, Chicago.

Francis X. Bisciglia, S.J., M.A. (1963)

Associate Professor of Classical Languages
A.B., 1938, M.A., 1939, Gonzaga University; S.T.L., 1947, St. Louis University; M.A., 1952, Fordham University.

Thomas A. Blakely, Jr., B.S. (1969)

Instructor in Psychology
A.A., 1961, Orange Coast College; B.S., 1963, University of Washington.

Roger E. Blanchette, S.J., M.A. (1966)

Assistant Professor of Theology
A.B., 1957, M.A., 1959, Gonzaga University; S.T.B., 1965, Alma College; M.A., 1965, University of Santa Clara.

Ella M. Blumenthal, M.A. (1969)

Assistant Professor of Nursing
B.S., 1955, Adelphi College; M.A., 1957, Teachers College, Columbia University; M.A., 1963, New York University.

Hamida H. Bosmajian, Ph.D. (1966)†

Assistant Professor of English
B.A., 1961, University of Idaho; M.A., 1962, Ph.D., 1968, University of Connecticut.

Robert I. Bradley, S.J., Ph.D. (1961)

Dean, College of Arts and Sciences
Associate Professor of History
A.B., 1947, M.A., 1948, Gonzaga University; S.T.L., 1956, Facultes Saint Albert, Louvain University; M.A., 1958, Ph.D., 1963, Columbia University.

John P. Burke, M.A. (1967)

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- Gary J. Buckley, B.A. (1969)**
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- Frank E. Case, S.J., M.A. (1969)**
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- Ernest F. Harrison, M.B.A. (1969)**
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- Arthur A. Jacobovitz, Rabbi, B.A. (1961)**
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- Charles P. Jenner, B.D. (1968)**
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SEATTLE UNIVERSITY CHAIRS

The following perpetual Chairs were established in 1968 and 1969 and will be filled by faculty members chosen each year by the deans and chairmen of the selected departments:

- 1968 Robert and Miriam Kinsey Chair of Fine Arts
- 1968 Therese B. Clein Chair of Philosophy
- 1968 Margaret S. Snyder Chair of Theology
- 1968 Theiline Pigott McCone Chair of History
- 1969 John and Zita Maloney Chair of Economics
- 1969 Harry and Florence Beyma Chair of Economics

A

Academic Calendars, 2, 3
 Academic Council, 25
 Academic Honoraries, 14
 Academic Regulations, 25
 Academics, 23-30
 Academic Student Organizations, 14
 Academic Terms, 25-27
 Accounting, 85
 Accreditation, 7, 25, 31, 84, 92, 104, 116
 Administrative Officers, 122-123
 Admission, 19-22
 Admissions, Board of, 20, 22
 Advanced Placement, 21, 25
 Advanced Standing, 22, 25
 Adviser, 12, 25
 Advisory System, 12
 Aegis, 14
 Alpha Epsilon Delta, 14
 Alpha Phi Omega, 14
 Alpha Sigma Nu, 14
 Application, 20
 Application Fees, 10, 20
 Applications for Housing, 15
 Art, 43-46
 Arts and Sciences, College of, 31-82
 Arts, Fine, 43
 A.S.S.U., 14
 A.W.S.S.U., 14
 Athletic Program, 13
 Attendance, 27
 Auditor, 10, 22, 25, 28
 Awards, 30

B

Baccalaureate Mass, 2, 3, 12, 25, 30
 Bachelors' Degrees, 30, 32, 84, 92, 104, 116
 Bellarmine Hall, 15
 Beta Gamma Sigma, 14
 Biology, 33-35
 Blood Bank, 13
 Board of Admissions, 20, 22
 Board of Trustees, 122
 Buildings, 6, 7, 8, 9, 15
 Business, School of, 83-90

C

Calendar Year, 2, 3
 Champion Tower, 15
 Campus, 8-9
 Campus Guide—Inside Back Cover
 Certification, Teacher, 25, 92-94
 Chairs, 133
 Change in Grade, 28
 Change of Major, 25
 Change of Registration, 29
 Change of School, 25, 29
 Chemistry, 35-38
 Christian Activities Program, 12
 Civil Engineering, 105-107
 Classical Degree, 26, 31
 College Entrance Board
 Examination, 16, 20-22
 Community Services, 39
 Confraternity of Christian
 Doctrine, 12
 Cooperative Engineering Program,
 104
 Core Curriculum, 24-25, 26
 Correspondence, 135
 Costs, 10
 Counseling and Testing Center, 12,
 21, 28
 Course Numbering System, 27
 Credit by Examination, 26, 27
 Credit, Correspondence, 22
 Credit, Extension, 22

Credit Hour, 26, 27
 Credit Hour Load, 27
 Curricula
 Arts and Sciences, 31-82
 Business, 83-90
 Education, 91-102
 Engineering, 103-114
 Nursing, 115-118
 Curriculum, 26

D

Deficiencies, 21, 26
 Definitions, 25-27
 Degrees, Bachelors, 30, 32, 84, 92, 104, 116
 Degrees, Masters, 119-120
 Business, 84
 English, 40
 History, 48
 Education, 92-93
 Engineering, 104, 105, 108, 111
 Natural Science, 33, 35, 36
 Dismissal, Academic, 25, 27
 Dismissal, Disciplinary, 23
 Drama, 43-45

E

Early Decision Plan, 20
 Economics, 89-90
 Education, Health and
 Physical, 101-102
 Education, School of, 91-102
 Electives, 26
 Electrical Engineering, 108-111
 Employment, Student, 18
 Engineering, School of, 103-114
 Civil, 105-107
 Electrical, 108-111
 Mechanical, 111-114
 English, 40-42
 Examinations, Entrance, 21
 Examinations, Graduate School, 120
 Examinations, Make-up, 26, 28
 Examinations, Medical, 21
 Examinations, Placement, 21
 Examinations, Quarterly, 28
 Expenses, 10

F

Faculty, 124-133
 Family Tuition Plan, 10
 Fees, 10
 Fields of Concentration, 26
 Fifth-year Programs, 94
 Finance, 85
 Finances, 10
 Financial Aid, 16-18
 Fine Arts, 43-46
 Foreign Students, 22
 Fragments, 14
 French, 57
 Freshman Orientation, 12, 26
 Freshman Standing, 27

G

Gamma Pi Epsilon, 14
 Gamma Sigma Phi, 14
 General Business, 85
 General Science, 32, 47
 German, 57
 Glossary of Academic Terms, 25-27
 Grade Point Average, 26, 28
 Grade Prediction Test, 21
 Grade Reports, 28
 Grading System, 28

Graduate School, 119-120
 Admission Requirements,
 119-120
 Classification of Students, 119
 Chemistry, 35, 38
 Degree Requirements, 120
 Degrees, 120
 Business, 84, 87-88
 Education, 91-92, 98-100
 Electrical Engineering, 108,
 110-111
 English, 40, 42
 History, 48, 50-51
 Mechanical Engineering, 111,
 113-114
 Natural Science, 35, 59, 69
 Graduate Student, 26
 Graduation, 30
 Grants, 17
 Greek, 58
 Guidance, 12, 20-21

H

Health and Physical Education,
 101-102
 Health Program, 13
 History, 48-51
 History, Seattle University, 6, 119
 Home Economics, 51-53
 Honoraries, 14
 Honors, Graduation, 30
 Honor Roll, 28
 Honors Program, 52-53
 Hospitalization Program, 13
 Housing Regulations, 15

I

I-20 Form, 22, 26
 Incomplete, Removal of, 28
 Intercollegiate Knights, 14
 Internship, 26
 Intramural Athletics, 13

J

Jesuit Fathers, 5, 6, 7
 Journalism, 55-56
 Junior Standing, 27

K

Kappa Delta Pi, 14

L

Languages, 56-58
 Language Requirements, 32, 56-58
 Latin, 58
 Lecturers, 132-133
 Liberal Arts Curriculum, 31
 Loans, 18
 Low List, 26

M

Major Fields, 26, 30
 Make-up Examination, 26, 28
 Management, 85
 Marian Hall, 15
 Marketing, 85
 Mass, Daily, 12
 Mass of the Holy Spirit, 2, 3, 12
 Masters' Degrees, 119-120
 Mathematics, 59-61
 Matriculate, 26
 Matriculation Fee, 10
 Mechanical Engineering, 111-114
 Medical Examination, 21
 Medical Records, 62
 Medical Technology, 63
 Military Science, 63-65
 Minor Field, 26

Music, 43-46
Music Scholarships, 17
Mu Sigma, 14

N

National Defense Student Loans, 18
National Science Foundation
Program, 37, 61, 70, 119
Natural Science Degrees,
32, 33, 35, 36
Nursing, School of, 115-118

O

Objectives, 5
Office Directory, 135
Organization of Schools,
Arts and Sciences, 32
Business, 84
Education, 92
Engineering, 104
Nursing, 116
Graduate, 119
Organization of Seattle University, 7
Organizations, Student, 14
Orientation, New Student, 12, 26

P

Personal and Social Guidance, 12
Philosophy, 66-68
Physical Education, 101-102
Physics, 69-71
Pi Mu Epsilon, 14
Placement, Advanced, 21, 25
Placement Examinations, 21, 26
Political Science, 72-73
Pre-College Tests, 21
Pre dental, 74
Prelaw, 74
Pre-Major, 21, 26, 74

Premedical, 73
Preprofessional Programs, 74
Prerequisite, 26
Principals' Credentials, 94
Probation, 26, 29
Probation, Admission on, 21
Programs of Study, 26
Provisional Students, 26
Psychology, 75-76
Purpose and Scope, 4-5

Q

Quality Points, 26, 28
Quarter Hours, Unit of
Instruction, 26, 27

R

Ratio Studiorum, 26
Readmission, 26, 29
Refunds, 10
Regents, Board of, 122
Registration, 27, 29
Regulations, Academic, 24-30
Religious Program, 12
Repeating a Course, 29
Requirements, Admission, 20-22
Requirements, Degree, 30
Residence Charges, 10, 15
Residence Halls, 15
Retreat, 12
Room and Board, 10, 15

S

Scholarships, 16, 17
Second Degree, 30
Senior Standing, 27
Service Honoraries, 14
Sigma Theta Tau, 14
Silver Scroll, 14

Sociology, 77-78
Sophomore Standing, 27
Spanish, 57-58
Special Students, 22, 27
Specific Curriculum, 27
Spectator, 14
Speech, 43, 46
Spiritual Guidance, 12
Spurs, 14
Student Classification, 27
Student Employment, 18
Student Expenses, 10
Student Health Center, 13
Student Health Insurance, 13
Student Housing, 10, 15
Student Loan Plans, 18
Student Organizations, 14
Student Publications, 14
Student Services, 11-18

T

Tau Beta Pi, 14
Teaching Certificates, 92-94
Theology, 79-82
Transcripts, 27, 29
Transfer Credit, 22, 27
Transfer from other Universities, 22
Transfer Students, 22, 27
Transfer within the University, 29
Transient Students, 22
Tuition, 10
Two Degree Programs, 30, 104

U

Unclassified, 27
Unit Requirements, 21
University Seal—Back Cover

W

Washington Pre-College Test, 21
Withdrawal, 27, 29

There is a central mail room on the campus to which all mail addressed to Seattle University, Seattle, Washington 98122, is delivered. Mail for student residence halls must be addressed to their respective locations. It will expedite delivery on the campus to specify the following as indicated:

Where to Write

Correspondence relating to the general interest of the university:
*Very Reverend Father
President*

Communications regarding curriculum, scholastic problems, degree programs:
*The Dean of the particular school or the Academic
Vice President*

Admission:
Director of Admissions

Alumni Affairs:
*Director, Seattle University
Alumni Association*

Athletic Program:
Director of Athletics

Bulletins and Catalogs:
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Counseling and Testing:
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Testing Center*

Diplomas and Graduation:
Registrar

Student Housing:
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Women: Dean of Women*

Financial Aid and Student Employment:
Director of Financial Aid

Foreign Students:
*Director of Admissions or
Foreign Student Adviser*

Gifts, Grants and Bequests:
Development Office

Graduate Study:
Dean of the Graduate School

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Father Minister

Late Afternoon and Evening Classes:
Dean, Graduate School

Personal Welfare and Health of Students:
Dean of Students

Public Information, Publicity:
University Relations

Readmissions:
Registrar

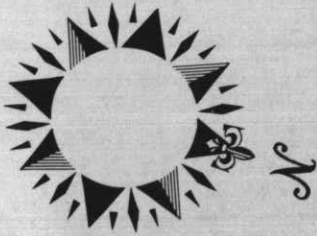
Scholarships:
Committee on Scholarships

Student Loans:
Director of Financial Aid

Teachers' Certification and Placement:
*Dean of the School of
Education*

Transcripts, Student Records, Grades:
Registrar

Tuition, Payment of Bills, Refunds:
Treasurer



TO OR FROM
FREWAY

BROADWAY

EAST JAMES WAY

10TH AVENUE

EAST JEFFERSON STREET

EAST CHERRY STREET

11TH AVENUE

TO OR FROM MERCER
ISLAND FLOATING BRIDGE

FOURTEENTH AVENUE

12TH AVENUE

FIFTEENTH AVENUE

ENTER CAMPUS
HERE

7

6

5

8

4

3

2

16

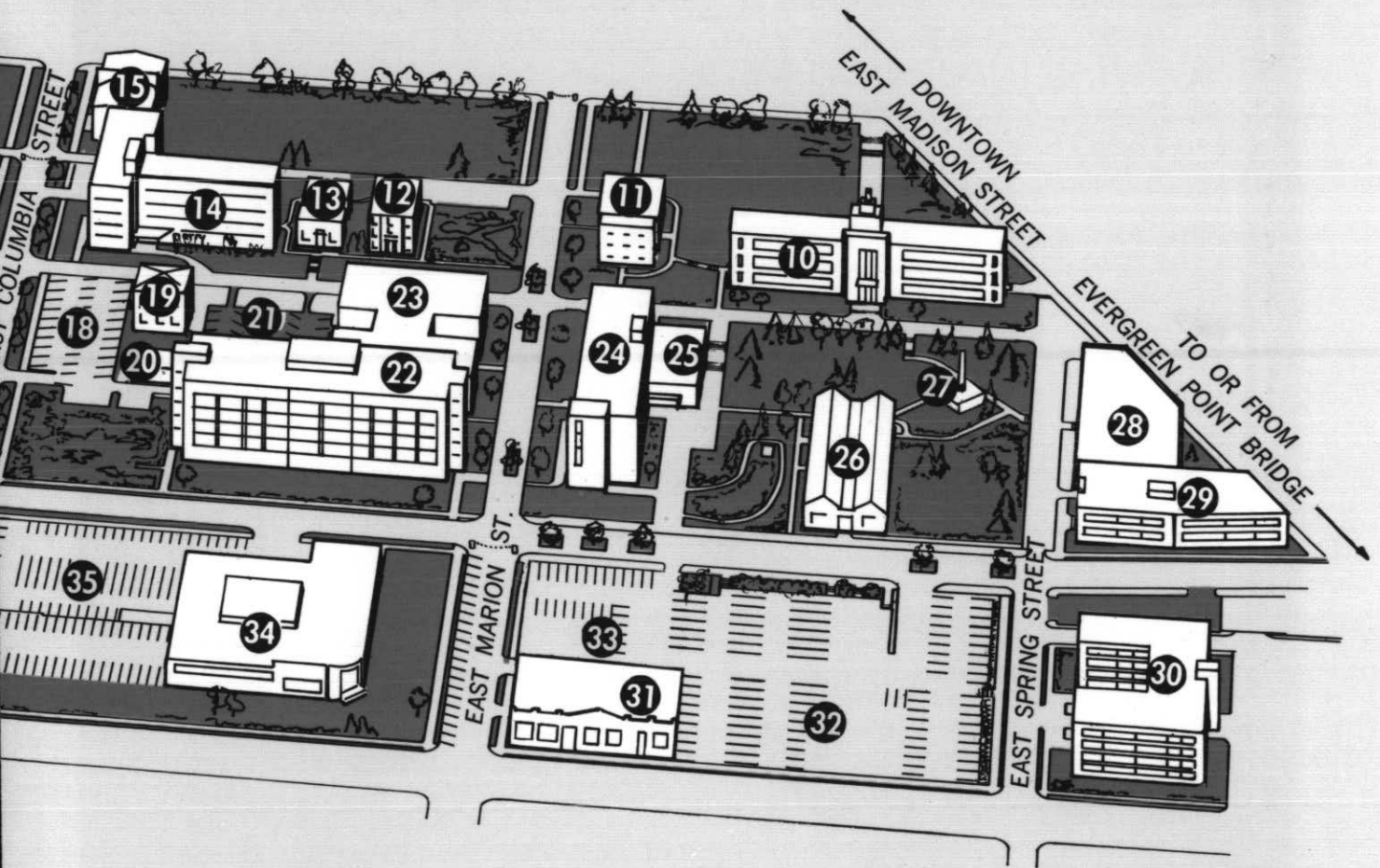
17

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36

CAMPUS GUIDE

- | | | |
|----------------------------|-------------------------------|--------------------------------|
| 1. Bellarmine Hall | 14. Loyola Hall | 26. Buhr Hall |
| 2. Student Parking | 15. Teatro Inigo | 27. Sculpture Lab. |
| 3. Student Parking | 16. 400-Parking | 28. Engineering Building |
| 4. Student Parking | 17. A. A. Lemieux Library | 29. Student Union |
| 5. Student Parking | 18. 300-Parking | 30. Xavier Hall |
| 6. Student Parking | 19. ROTC Headquarters | 31. Maintenance Shop |
| 7. Campion Tower | 20. Alumni House | 32. 100-Parking |
| 8. Urban Affairs Institute | 21. 300-Parking | 33. 100-Parking |
| 10. Liberal Arts Building | 22. Thomas J. Bannan Building | 34. University Bookstore |
| 11. Garrand Building | 23. Marian Hall | 35. Visitor 200-Parking |
| 12. McCusker Building | 24. William Pigott Building | 36. Archbishop Connolly Center |
| 13. Loyola Annex | 25. Pigott Auditorium | |





The Seattle University Seal

The letters IHS at the top of the design are from the Greek spelling of Jesus and are especially significant to the Society of Jesus, which conducts the University. The American eagle and shield symbolize the relationship of the University to the nation it serves.

At the upper left of the shield proper, the two wolves over the pot are traditional symbols of the generosity of the house of Loyola, family of the founder of the Jesuits. The seven diagonal stripes at the right are awards for valor made to the family.

In the lower portion of the shield, the crescent is the sign of the Immaculate Conception, patroness of the school; the evergreen tree represents the State of Washington and is a traditional symbol of knowledge; and the Indian tepee commemorates Chief Seattle, whose name the University and the city in which it is located both bear.

Seattle University

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EAST 3-9400