



**University of Alaska
Catalog 1967-68**

Our cover shows students studying on Wickersham Green in the Fall. Wickersham Hall, women's residence hall, is in the background. Color photo by Donald W. Miller.

Catalog

University of Alaska 1967-68

College, Alaska
Second Series, No. 33

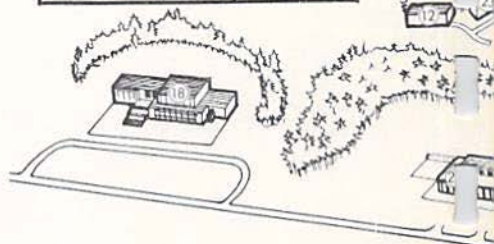
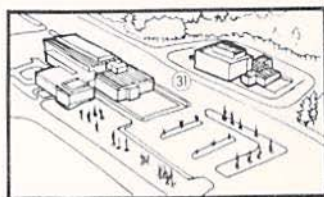
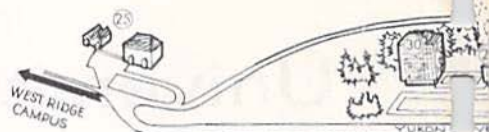
MAIN CAMPUS

The University of Alaska

College, Alaska

Buildings

- (1) BROOKS BUILDING — Classrooms, laboratories, offices for College of Earth Sciences and Mineral Industry
- (2) BUNNELL BUILDING — General Administrative offices, classrooms, library, Schaible Lecture Hall, offices of College of Arts and Letters
- (3) CONSTITUTION HALL (Student Union) — Student activities offices, snack bar, alumni services, bookstore, KUAC studios.
- (4) DUCKERING BUILDING — Classrooms, laboratories, offices of College of Mathematics, Physical Sciences and Engineering, College of Business, Economics and Government, Institute of Marine Science, Computer Center
- (5) EIELSON BUILDING — Classrooms, laboratories, offices of College of Behavioral Sciences and Education
- (6) FACULTY HOUSING
- (7) FOREST SCIENCES LABORATORY
- (8) GEOPHYSICAL INSTITUTE
- (9) HEALTH SERVICE CENTER
- (10) HESS HALL, HARRIET — Dormitory
- (11) TOTEM POLE
- (12) LATHROP HALL, AUSTIN E. — Dormitory
- (13) BOYD HARWOOD HALL (Married Student Apartments)
- (14) McINTOSH HALL, JOHN E. — Dormitory
- (15) MEMORIAL PLAZA
- (16) MUSEUM — Upper floor houses music facilities
- (17) NERLAND HALL, ANDREW — Dormitory
- (18) PATTY BUILDING — Gymnasium, pool, ROTC, Rifle Range
- (19) POWER PLANT
- (20) PRESIDENT'S RESIDENCE
- (21) SERVICES BUILDING
- (22) STATEWIDE SERVICES BUILDING — Administrative offices
- (23) STEVENS HALL, MORTON — Dormitory
- (24) STUART HALL — Faculty apartments
- (25) U.S. COAST AND GEODETIC SURVEY — Observatory houses seismograph installation for the continuous registration of earth tremors
- (26) UNIVERSITY COMMONS — Dining facility for all dormitory residents
- (27) WALSH HALL — Married students apartments
- (28) WICKERSHAM HALL — Dormitory
- (29) IVAR SKARLAND HALL (Women's Dormitory)
- (30) TERRIS MOORE HALL (Dedicated May 21, 1967)
- (31) WEST RIDGE — Arctic Research Center (offices of College of Biological Sciences and Renewable Resources in Bio-Sciences Building)
- (32) Site of new Library, Fine Arts and Humanities Building





University campus is situated on a 2,250 acre site, four miles from Fairbanks. Campus includes more than two dozen major buildings. Construction of new buildings, authorized by voters in 1966, will begin in the spring of 1967.



University Calendar

1967 Summer Session

Pre-session	June 5-June 9, 1967
Short Session	June 12-June 30, 1967
Intercession	July 3-July 8, 1967
Regular Session	July 10-August 8, 1967
Post-session	August 21-August 25, 1967

Proposed 1967-68 Academic Year Calendar

Labor Day	Mon. Sept. 4
Dormitory Rooms Open	Noon Wed., Sept. 6
Orientation and Guidance Testing form New Students	7:00 p.m. Wed., Sept. 6
.....	through Sunday, Sept. 10
General Faculty Convocation	10:00 a.m. Tues., Sept. 5
Faculty Meetings (Academic Colleges)	2:30 p.m. Wed., Sept. 6
Faculty Meetings (Departmental)	9:30 a.m. Sat., Sept. 2
Counselling of Students by Advisers	Noon Fri., Sept. 8
.....	through 5:00 p.m. Sat., Sept. 9
Registration	
New Students	8:00 a.m. to 5:00 p.m. Sat., Sept. 9
Returning Students	8:00 a.m. to 5:00 p.m. Mon., Sept. 11
Instruction Begins	8:00 a.m. Tues., Sept. 12
Registration Closes	5:00 p.m. Mon., Sept. 25
Last Day to Withdraw without Grade	5:00 p.m. Mon., Sept. 25
Last Day for Making Up Incompletes	5:00 p.m. Mon., Oct. 23
Six Week Grade Reports	Wed., Oct. 25
Thanksgiving Recess	Begins 5:00 p.m. Wed., Nov. 22
.....	to 8:00 a.m. Mon., Nov. 27
Christmas Recess	Begins 5:00 p.m. Sat., Dec. 16, 1967
.....	to 8:00 a.m. Tues., Jan. 2, 1968
Last Day for Student-Initiated Withdrawals	Tues., Dec. 19
Examination Study Period (No Classes)	Wed., Jan. 10
Semester Examinations	8:00 a.m. Thurs., Jan. 11
.....	to Noon Wed., Jan. 17
Final Grades on File with Registrar	Noon Thurs., Jan. 18
End of Fall Semester	5:00 p.m. Fri., Jan. 19

1967-68 Spring Semester

Dormitory Rooms Available	Noon Wed., Jan. 17
Orientation and Guidance Testing for New Students	9:00 a.m. Thurs., Jan. 18
.....	to 5:00 p.m. Fri., Jan. 19
Counselling of Students by Advisers	Noon Thurs., Jan. 18
.....	to 5:00 p.m. Fri., Jan. 19
Registration	8:00 a.m. to 5:00 p.m. Mon., Jan. 22
Instruction Begins	8:00 a.m. Tues., Jan. 23
Registration Closes	5:00 p.m. Mon., Feb. 5
Last Day to Withdraw without Grade	5:00 p.m. Mon., Feb. 5
Last Day for Making Up Incompletes	5:00 p.m. Mon., Mar. 4
Six Week Grade Reports	Wed., Mar. 6
Spring Recess	Begins 5:00 p.m. Thurs., Mar. 14
.....	to 8:00 a.m. Mon., Mar. 18
Last Day for Student-Initiated Withdrawals	Wed., Apr. 17
Last Day to Submit Graduate Thesis	5:00 p.m. Thurs., Apr. 25
All-Campus Day	Friday, April 26
Governor's Day	Sat., May 4
Examination Study Period (No Classes)	Thurs., May 11
Semester Examinations	8:00 a.m. Fri., May 10
.....	to Noon Thurs., May 16
Final Senior Grades on File with Registrar	9:00 a.m. Fri., May 17
End of Spring Semester	5:00 p.m. Fri., May 17
Final Grades on File with Registrar	5:00 p.m. Fri., May 17
Baccalaureate	Sun., May 19
Commencement	Mon., May 20

1968 Summer Session (Tentative)

Short Session	June 3-June 21, 1968
Regular Session	June 24-August 4, 1968
Post Session Workshop	August 5-August 9, 1968

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ANCHORAGE REGIONAL CENTER

Anchorage Community

College

Elmendorf-Ft. Richardson

Evening Classes

Ketchikan Community

College

Juneau-Douglas

Community College

Matanuska-Susitna

Community College

Sitka Community College

Kenai Peninsula

Community College

Mailing Address for

Main Office:

University Relations

**Director of Admissions
and Registrar**

Director, Student Affairs

Director, Student Affairs

Head, Student Activities

Head, Student Housing

**Vice President for Research
and Advanced Study**

**Head, Summer Sessions,
Conferences and Short Courses**

**Head, Alumni Services and
Graduate Placement**

Cooperative Extension Service

**Dean, College of Earth Sciences
and Mineral Industry**

**Cooperative Wildlife Research Unit
and Dept. of Wildlife Management**

**Dean, Division of Statewide
Services**

Provost

**1820 W. Northern Lights Blvd.
Anchorage, Alaska 99501**

Director

**1820 W. Northern Lights Blvd.
Anchorage, Alaska 99501**

Director

**1820 W. Northern Lights Blvd.
Anchorage, Alaska 99501**

Director

**Box 358
Ketchikan, Alaska 99901**

Director

**1250 Glacier Avenue
Juneau, Alaska 99801**

Director

**Box 86
Palmer, Alaska 99645**

Director

**Box 179
Sitka, Alaska 99835**

Director

**Box 539
Kenai, Alaska 99611**

**University of Alaska
College, Alaska 99701**



Half of the University's modern buildings have been constructed since 1960.

General Information

HISTORY

The University dates from 1915, when on July 4 the Hon. James Wickersham, delegate to Congress from Alaska, laid the cornerstone on land set aside by Congress, on March 14, for the support of a Territorial College and School of Mines. The Territorial Legislature by its Acts of May 3, 1917, accepted the land grant and created a corporation, "The Alaska Agricultural College and School of Mines," defining its duties and providing for a Board of Trustees consisting of eight members.

The College opened for instruction on September 18, 1922, with the Hon. Charles E. Bunnell as president. The college became the University of Alaska by Act of the Territorial Legislature, July 1, 1935, the Board of Trustees became the Board of Regents. The University offered its first summer session in 1947. In 1949, Dr. Terris Moore succeeded the late President Bunnell, who became President Emeritus.

Dr. Ernest N. Patty, member of the first faculty of the Alaska Agricultural College and School of Mines and former Dean of the College, was inaugurated as the third president of the University in 1953 and named President Emeritus upon his retirement in 1960, when Dr. William R. Wood became the fourth president.

OBJECTIVES OF THE UNIVERSITY

Truly unique among institutions of higher learning in the United States, the University of Alaska serves, within the scope of its resources, all of the public educational needs, beyond high school, of an entire state.

When the Legislature established Alaska's state university, it joined with the national government to make it also a land-grant university with a fivefold function:

To instruct youth and adults seeking higher learning in the liberal arts, the sciences and the professions;

To increase and apply, through research, knowledge of value to mankind, and particularly to the residents of the State;

To serve the people throughout the 586,400 square miles of Alaska as an intellectual, scientific, and cultural resource;

To provide and to develop competent leadership for the people of Alaska in their continued improvement of the State as a good region in which to live;

To strive above all, to develop in its students, at all levels, those qualities of mind and body which are necessary for life as a worthy human being in a democratic society.

ACCREDITATION

The University is accredited as an institution of higher learning by the Northwest Association of Secondary and Higher Schools; belongs to the Association of American Colleges, the Association of State Universities and Land-Grant Colleges, and the National Commission of Accrediting; and has institutional membership in the American Council of Education, the American Association of Colleges for Teacher Education and the Western Interstate Commission for Higher Education.

The four-year curriculums in Mining Engineering and Geological Engineering and five-year curriculums in Civil Engineering and Electrical Engineering are accredited by the Engineers Council for Professional Development. The Council represents the principal engineering societies and examining boards of the United States and Canada.

The University is approved by the Federal Office of Vocational Education for teacher-training in Vocational Home Economics. It is also on the approved list of colleges and universities of the American Association of University Women.

CARNEGIE CORPORATION GRANT

The Carnegie Corporation of New York has awarded the University a grant of \$150,000 for the purpose of bringing to the University outstanding visiting professors in the humanities and social sciences. This is the sixth year of the grant. The visiting professors will be specialists in such subjects as music, art, linguistics, English, philosophy, psychology, history, economics and political science.

CAMPUS BUILDINGS AND FACILITIES AT COLLEGE, ALASKA

Administrative and Classroom Buildings — The Bunnell Memorial Building, dedicated to the late Charles E. Bunnell, first president of the University, consists of general administrative offices, classrooms, laboratories, a large lecture hall, and the library. It also includes offices of the College of Arts and Letters.

The Brooks Memorial Mines Building provides space for classrooms, laboratories, and offices of the College of Earth Sciences and Mineral Industry; the Alaska State Division of Mines and the United States Geological Survey. The four-story structure is dedicated to the late Dr. Alfred H. Brooks, chief Alaskan Geologist of the U.S. Geological Survey from 1903 to 1924.

The BioSciences Building, completed in the winter of 1966, provides offices, research facilities and laboratories for upper division classes of the College of Biological Sciences and Renewable Resources. It also houses the Institute of Arctic Biology.

The Eielson Memorial Building contains general classrooms, laboratories and offices of the College of Behavioral Sciences and Education and the offices of the Division of Statewide Services.

The **William E. Duckering Building** houses offices, classrooms and laboratories of the College of Mathematics, Physical Sciences and Engineering, the College of Business, Economics and Government, the Institute of Social, Economic and Government Research, the Institute of Marine Science, and laboratories of the State Highway Materials Division, and the Computer Center.

The **Ernest N. Patty Building**, dedicated to President-Emeritus Ernest N. Patty, includes a gymnasium, swimming pool, rifle range, classrooms and office facilities for the Department of Health, Physical Education and Recreation and the Department of Military Science.

The **Museum** exhibits more than 100,000 catalogued specimens of Eskimo and other artifacts in mineral, anthropological, ethnological, paleontological, botanical, and natural history fields.

The **Geophysical Institute** is a three-story structure containing facilities for research in arctic and sub-arctic natural phenomena and for graduate instruction in geophysics.

The University Library — A variety of resources and services are available in the University Library. In addition to a good basic book collection, the library subscribes currently to approximately 1500 journals and a selection of newspapers — from Alaska, the other states and foreign countries.

Microforms, including microfilm, micro-card, and microfiche, and microform readers are housed in a separate room on the lower level of the library. Significant among the microform holdings are such items as the microfilm edition of *The New York Times* and the *Records of the Russian-American Company, 1802-1867*, and the microfiche edition of the *Human Relations Area File*.

Tables are also available on this level for individual listening to the non-circulating collection of phonograph records which the library maintains.

The University Library is a depository for publications of the United States Government and the Atomic Energy Commission. This extensive document collection is located on the library mezzanine.

The main floor of the library contains the special Skinner Collection of Alaskan and most of the reference collection, including important indexes.

A smoking area on this floor permits students to study or relax in comfortable, informal surroundings.

Books for which faculty may make special assignments are shelved in the Reserve Book Section which is also located on the main floor.

Interlibrary loan service for graduate students and faculty is handled from the administrative office of the library.

A subject library in the area of Geophysics, on the second floor of the Geophysical Institute Building, is open to those who have a need for such material.

ENROLLMENT SUMMARY 1966-67 First Semester

	Men	Women	Total
Freshmen	436	236	672
Sophomores	146	63	209
Juniors	123	66	189
Seniors	103	43	146
Graduates	89	44	133
Without Class Standing	110	134	244
Transfers	128	66	194
Post Graduates	59	35	92
Totals	1192	687	1879

ENROLLMENT DISTRIBUTION 1966-67 First Semester

Alaska	1487
Other States and U.S. Possessions	356
Foreign Countries (13)	36
Total	1879

A summer French class is held in Memorial Plaza. The Plaza is a favorite meeting place for students.



Admissions

REQUIREMENTS FOR ADMISSION

Admission as a Freshman

1. High School Graduates — Baccalaureate Programs

Residents — An Alaskan high school graduate with an academic average of "C," or higher, is eligible for admission. An Alaskan whose high school grades averaged less than "C" will be considered for admission to the University only if his performance on a qualifying test demonstrates that he has the capacity to undertake successfully college academic work. The test required in such cases is prepared by the American College Testing Program. The ACT test is administered at testing centers throughout the country in November, February, April and June of each year. Most Alaska high schools serve as ACT testing centers in November and/or February. Arrangements for taking the ACT test may be made through each high school's principal or guidance officer. The cost of the test to the student is \$4.00.

Non-Residents — A non-resident high school graduate with an academic average of "B," or higher, is eligible for admission. A non-resident whose high school grades averaged less than "B" will be considered for admission to the University only if his performance on a qualifying test demonstrates that he has the capacity to undertake successfully college academic work. The test required in such cases is prepared by the American College Testing Program. Information concerning ACT testing centers and dates may be obtained from most high schools throughout the nation and from the American College Testing Program, Post Office Box 168, Iowa City, Iowa.

High School Subject Requirements

A high school graduate offering the following pattern of studies will have no deficiencies in any program that he enters.

Subject	Units
English	3
Mathematics:	
Algebra	2
Geometry	1
Trigonometry	$\frac{1}{2}$
One Foreign Language	2
United States History	1
Physics or Chemistry	1
Natural or Social Science	1
Elective	4
TOTAL.....	15½

The specific entrance requirements for a high school graduate of the six colleges of the University are given below:

College	English	Mathematics	°°Foreign Language	U.S.	Natural or Social Science	Academic and Elective
College of Arts and Letters	3	Algebra—1 Geom.—1	2	1	2	5
College of Behavioral Sciences and Education: Anthropology, and Geography, Psychology and Sociology	3	2	2	1	4	5
Education and Home Economics	3	°2	0	1	2	7
College of Biological Sciences and Renewable Resources	3	†Algebra—2 Geom.—1 Trigon.—½	‡	1	Physics or Chemistry—1 Biology or Elective—1	7
College of Business, Economics and Government:						
Business Administration	3	2	‡	1	2	7
Economics, History and Political Science	3	2	2	1	2	5
College of Earth Sciences and Mineral Industry	3	Algebra—2 Geom.—1 Trigon.—½	0	1	Physics or Chemistry—1	7½
College of Mathematics, Physical Sciences and Engineering	3	Algebra—2 Geom.—1 Trigon.—½	0	1	Physics or Chemistry—1	7½

* Plane Geometry required of Education students who intend to select teaching majors and/or minors in mathematics, chemistry, and/or physics.

°° Students who offer 2 units of a high school foreign language will normally enroll in second year language. See placement tests, page 33.

† 1 year of algebra and 1 year of geometry will be acceptable for students in Agriculture and Biological Sciences not wishing to continue with advanced studies, such as graduate work, medicine, etc.

‡ Two years of French, German, or Russian language highly recommended. See departmental curricula.

Entering freshmen whose background of training in English and mathematics appears to be deficient when measured by placement tests may be required to take English 1 or Math A or both. Achievement of a certain level of excellence in these subjects is essential to success in other areas of study. These basic English and mathematics courses are especially designed to assist the student in achieving these competencies.

Courses completed at the junior high school level and certified on the official high school transcript by secondary school officials as being equivalent to courses normally offered at the high school level will be accepted as meeting college entrance requirements.

When a student is deficient in specific subjects, but offers a satisfactory general record, he may enter with an entrance deficiency. The student must remove deficiencies during the freshman year. All courses taken to remove deficiencies must satisfy the department head concerned, and must be in the subject in which the student is deficient.

2. Non-High School Graduates — Baccalaureate Programs

Mature students, at least 21 years of age, residing in Alaska, who have not graduated from high school, or been awarded a high school diploma on the basis of GED military tests, or have not completed any previous college level work, may be admitted. Such students may be converted to "regular" student status and become baccalaureate degree candidates after completion of not less than 30 collegiate semester hours of credit with at least a "C" average (2.00).

3. High School Graduates — Associate Programs

Any high school graduate is eligible for admission to all associate degree programs except electronics technology (see page 118).

Admission of a Transfer Student

Transfer students from other accredited institutions are considered for admission provided they have a 2.00 grade point average and honorable dismissal. The University will transfer credits from other accredited institutions when the grades of courses completed are "C" or above. Transfer credits are evaluated and equated by the Registrar and approved by the department head after a student is admitted to the University. The University reserves the right to reject work of doubtful quality or to require an examination before credit is allowed.

Transfer students with less than thirty acceptable credits are required to take the tests prepared by the American College Testing Program. Information concerning ACT testing centers and dates may be obtained from most high schools throughout the nation and from the American College Testing Program, Post Office Box 168, Iowa City, Iowa.

Members of the Armed Forces who have taken USAFI courses may, upon presentation of credentials to the University's Head of Evening Classes and Correspondence Study, receive credits as recommended in the Evaluation of Educational Experiences of the Armed Forces. College credit will not be allowed for the General Educational Development Tests.

Credit for military service may be substituted for the ROTC and/or physical education requirements.

Admission of Post Graduate and Graduate Students

Post Graduate — Students who hold a bachelor's degree but who have not defined their graduate program or declared the subject in which

they wish to pursue their studies toward a higher degree may be admitted as "Post Graduates." Registering as a post graduate is satisfactory for those who hold a bachelor's degree and who have the following or similar purposes:

1. Students who plan to take "interest" courses.
2. Students completing work for a teaching certificate.
3. Students completing a second undergraduate major and/or a second bachelor's degree.
4. Students strengthening their preparation in order to be admitted to graduate study.
5. Transient students expecting to be at the University only briefly.
6. Students awaiting action on applications for graduate status.

Graduate — See page 30.

Admission of Others

Special Students — Mature students, at least 21 years of age, who have graduated from high school and/or attended college previously may be admitted without filing transcripts of high school or college work completed. Such students are limited to enrollment in two classes unless special permission is obtained. Special students are subject to the academic regulations of the University, but are not considered degree candidates until regular admission requirements are met and transcripts filed.

Auditors — Auditors are students who enroll for informational instruction only. They do not receive academic credit, have laboratory privileges or submit papers for correction and grading. They must apply for admission, register formally on the designated registration dates, obtain approval of class instructors and pay the required fees.

A course in which a student registered as an auditor may not be completed for credit by examination at a later date.

High School Students — To facilitate the transition and adjustment from high school to college the University has made special provisions for students of varied background and ability. Qualified Alaskan high school seniors of advanced academic standing and ability are permitted to enroll, while attending high school, in certain University of Alaska classes taught by University faculty and to enroll in college courses which may be offered at authorized high schools. To qualify for admission to college classes while still attending high school, a high school senior must have the recommendation of his high school principal, the approval of his parents, and a satisfactory score on the usual testing program required for entering students. Credits earned in such college classes may not be applied to high school graduation, but will apply toward graduation from the University and may be

transferred to other universities following graduation from high school, provided the grades earned are satisfactory. Seniors who are interested in participating in this program should contact their high school principal.

After enrollment at the University, a student may receive credit in CEEB Advanced Placement Tests, or the equivalent, when test scores warrant it and may receive course credit by examination upon presentation of adequate justification.

APPLYING FOR ADMISSION

When to Apply

Seniors in high school should make application for admission during the last semester of their senior year, if they plan to enroll at the University during the next fall semester. Transfer students should apply after the completion of a semester or school year, so that a complete transcript can be sent. Graduate students should make application during their senior year of college. Applications for admission should be presented no later than August 1st for the fall semester and December 15th for the spring semester. Applications received after these closing dates may be considered for the following semester.

How to Apply — Read Carefully.

Application forms may be obtained from the Office of the Director of Admissions and Registrar. Applications for admission will be considered only when the following credentials have been received by the Office of the Director of Admissions and Registrar:

1. **Application for Admission.** The \$10 application fee must accompany the completed application for admission form.
2. **Scholastic records.** A secondary school record form completed by the high school where the applicant finished his high school work should be mailed by the high school. Applicants are required to submit complete official transcripts of all high school and college credits. If the work has been taken at two or more collegiate institutions, an original transcript from each college attended is required. These transcripts should be sent directly from the registrar of the college where the work was taken to the Director of Admissions and Registrar at the University of Alaska. The applicant is responsible for securing these scholastic records. An application for admission is not processed until all such records are on file. Any person who willfully refrains from transferring all of his scholastic records or giving full information concerning previous attendance at other institutions will not knowingly be accepted or retained as a student.
3. **Letters of recommendation** (graduate applicants only).

After receiving and processing the above materials, the Registrar's office will mail to the student a statement of acceptance or non-acceptance. After the acceptance statement is received, the following items, where applicable, should be completed and mailed to the proper offices within the time limits suggested.

1. **College catalogs** (transfer students only). Transfer students are responsible for having catalogs of colleges previously attended sent to the Director of Admissions and Registrar at least two months prior to the expected date of enrollment.
2. **Medical and Physical Examination.** Registration at the University is dependent upon the applicant's having completed a recent physical examination which will confirm that his health is sufficient to enable him to undertake successfully the course of study for which he is applying. This requirement applies to all new students enrolling in 7 credits or more, any students enrolling in 7 or more hours for the first time, and to former students returning to the University after an absence of two or more semesters enrolling in 7 or more credits. The physical examination is to be completed by the physician of the applicant's choice, and recorded on the University physical examination form, no earlier than five months before registration and no later than two weeks before registration. Evidence of smallpox vaccination within three years and results of a Tuberculin Test within the year (also of chest x-ray within the year if the test is positive) must be included. These all must be received by the University Nurse before registration may be completed. A physical examination form will be sent with the notice of acceptance.
3. **Residence Hall-Board contract and advance.** All accepted single students will receive a residence hall-board contract with their acceptance notice from the Registrar's Office. In order to secure a room in the residence hall, this form should be completed immediately and mailed to the Head of Student Housing, University of Alaska, with a \$35.00 room advance. For additional information on single student housing and/or married student housing, see the appropriate sections in this catalog.
4. **ACT results.** Entering freshmen and transfer students with less than 30 semester hours of transferable credit who have taken the American College Testing Program should have their test results sent to the University prior to registration. If the University of Alaska was not indicated as an institution to receive the results when the candidate took the test, he should write to the American College Testing Program and have the results forwarded to the University. The request should be addressed to the American College Testing Program, Box 168, Iowa City, Iowa.

Conditional and Final Acceptance

Qualified applicants can be accepted for admission while currently enrolled in their last semester of high school or at another college. However, the acceptance is conditional upon receipt of an official transcript indicating the satisfactory completion of the work in progress at the time of acceptance and in the case of high school seniors and graduate applicants, the completion of graduation requirements.

Final acceptance to the University for the purpose of earning scholastic credit becomes complete only when all credentials have been received and accepted.



Choir of the North, the University's renowned choral group, offers several concerts a year. Performances are also given in other areas of the state.

Fees and Expenses

Summary of Semester Charges

Full-time Students	Resident	Non-Resident
University Fee	\$100.00	\$250.00
Campus Activity Fee	26.00	26.00
Recreational-Athletic Fee	\$ 4.50	
Associated Student Fee	16.50	
Campus Activity Center Fee	5.00	
Health Services Fee	15.00	15.00
	<hr/>	<hr/>
	\$141.00	\$291.00
Dormitory Rent (double room)	230.00	230.00
Meal Tickets (2nd Sem. \$357)	344.00	344.00
	<hr/>	<hr/>
Total Fees	\$715.00	\$865.00

Part-time Students (7 to 11 credit hours):

University Tuition Fee:		
7-credit hours	\$110.00	\$135.00
8-credit hours	110.00	160.00
9-credit hours	110.00	185.00
10-credit hours	110.00	210.00
11-credit hours	110.00	235.00
Campus Activity Fee	10.00	10.00
Associated Student Fee	\$ 5.00	
Campus Activity Center	5.00	
Recreational Athletic Fee (\$5.00)	vol.	vol.
Health Services Fee (\$15.00)	vol.	vol.
Dormitory Rent (\$230.00)	space available	
Meal Tickets (\$344.00)	vol.	vol.

All semester charges are payable each semester upon registration.

Students normally will pay approximately the sums above at semester registration time. However, those taking less than 7 semester credit hours pay \$18.00 per credit hour in lieu of the University Fee, and are not eligible for dormitory occupancy.

Other expenses at registration time may require extra funds for less predictable amounts, including personal and social expenses, text books, meals needed before meal tickets become effective, bus fare, and athletic equipment, musical instruments and other specialized classroom supplies which certain students may need.

TUITION

University Fee—Students registering for seven to eleven (7-11) credit hours shall be charged a fee of \$110.00 per semester. Students registering

for twelve (12) or more credit hours shall be charged a fee of \$100.00 per semester. Residents and non-residents alike shall pay this fee.

Credit-hour Fee—Students registering for less than seven (7) semester credit hours shall be charged a fee of \$18.00 per credit hour.

Residents — Persons 19 years or older who have established residence in Alaska for at least one year prior to the date set for registration shall be defined as Alaskan residents. The residence of those under 19 years old is the residence of the parents or legal guardians as defined above. Students from the Yukon Territory may register on the same basis as Alaskan students.

Non-residents—Extra tuition shall be charged full-time non-resident students carrying twelve or more semester credit hours, at \$150.00 per semester. Part-time, non-resident students carrying 7 to 11 credit hours shall be charged tuition at the following rates:

7-credit hours	\$ 25.00
8-credit hours	50.00
9-credit hours	75.00
10-credit hours	100.00
11-credit hours	125.00

Fee rates apply to students auditing any course in the same manner as for those taking it for credit.

MISCELLANEOUS FEES

Application Fee — A fee of \$10 shall be paid at the time the application for admission is submitted.

Late Registration Penalty — Students registering later than the day designated for that purpose shall pay a late registration fine of \$5.00 for the first day, plus \$2.00 for each succeeding day allowed for late registration (excluding Saturday and Sunday).

Change of Registration—A penalty fee of \$1.00 shall be paid for each course added or dropped after the third day following the scheduled date for registration. Changes necessitated by University cancellation or re-scheduling of classes are not subject to penalty.

Examination Fee—A minimum charge of \$3.00 shall be made for each examination required for removal of an incomplete, clearance of an entrance deficiency or credit by examination, plus an additional \$1.00 for each credit over three.

Late Placement and Guidance Test—A charge of \$5.00 shall be made for a placement and guidance test taken at a time other than the scheduled time.

Transcript Fees—One certified transcript is issued free. A charge of \$1.00 shall be made for each additional transcript.

Graduate Placement Fee—The University charges \$10.00 for filing of credentials and one year of service. Thereafter, \$5.00 is charged for each year the file is used. There is no filing fee for students who file before graduation.

Program Plan—The Registrar's Office will provide without charge one plan for a schedule of courses leading to a degree. A fee of \$5.00 will be charged for each subsequent alternate plan.

Music Course Fees—All music fees shall be waived for students enrolled for seven or more credit hours and taking a major or minor in Music Education, as certified by the department chairman.

Mining Short Course Fee—A single fee of \$5.00 per non-credit unit shall be charged for registration in the mining short course.

Residence Hall Room Change—A fee of \$10 will be charged for every move within the halls after the first one if initiated by the student.

CAMPUS ACTIVITY FEES

Full-time undergraduate students carrying twelve (12) or more semester credit hours or the equivalent, under twenty-six (26) years of age, shall be charged the Campus Activity Fees totaling \$26.00 per semester. Each will receive an identification card entitling him to privileges in the following programs:

Recreation — Athletics Program — Use of Patty Building recreation facilities, including pool, admission to scheduled and tournament athletic events. This program is administered by the head of the Department of Health, Physical Education and Recreation.

Associated Students Program — Participation in all student-managed, social, educational, and governmental activities, including receipt of student paper and year book, movies, scheduled social events, and student elections and administration of student government. This program is administered by elected and appointed student officials of ASUA. Five dollars of this fee is designated for planning and design of a new Campus Activities Center building.

A deposit of \$2.00 will be required once each year of all students paying the \$26.00 Campus Activity Fee. This sum will be refunded at the time of taking the student's picture for the year book.

Part-time students carrying seven (7) or more semester credit hours, including graduate students and those 26 years of age or older carrying 12 or more credit hours, shall be charged a Campus Activity Fee of \$10.00 per semester. Each will receive an identification card entitling him to all privileges of the Associated Students program, except voting,

holding office, the year book and movies. Such students may purchase voluntarily privileges of the Recreation-Athletics Program at \$5.00 a semester.

STUDENT HEALTH SERVICE FEE

Undergraduate students under twenty-six (26) years of age, carrying twelve (12) or more semester credit hours or equivalent shall be charged a Student Health Service Fee of \$15.00 per semester.**

The student health program is administered by the Health Center under the direction of the Director of Student Affairs and the University Nurse. Hospital and medical treatment for common illnesses and injuries are provided, upon the authorization by the University Nurse, under limits of coverage set forth in the Student Health Plan. Each student will be supplied with a set of regulations outlining this plan.

Married students may secure additional coverage for spouse and children if desired. Rates for such coverage will be quoted at registration time.

ROOM AND BOARD

Contracts for board and room are binding for only fully enrolled students from time student enters the dormitory to the end of the academic year.

Room Advance—A \$35.00 dormitory application and reservation advance is required with the student contract. This is applied to the rent in the semester for which the room reservation was made. For students not enrolling at the University, refunds of this advance payment will be made as follows after registration, provided Housing Office is notified in writing according to the dates specified:

By August 1 - Fall semester — December 15 - Spring semester	\$25.00
By August 15 - Fall semester — January 1 - Spring semester	15.00
By September 1 - Fall semester — January 15 - Spring semester	5.00

Room Rent—

On Double Room:	\$230.00 per semester
On Single Room:	\$265.00 per semester

This rental covers all lounge, recreation room, storage room, laundry room and telephone privileges. Toll calls may not be made over floor phones in dormitories.

Meal Tickets—When registering, each dormitory occupant is required to buy a semester meal ticket for cafeteria meals.

First Semester Meal Ticket	\$344.00
Second Semester Meal Ticket	357.00

** (Other students, under 35 years of age, may pay this fee voluntarily.)

Meal tickets become effective at dinner, September 11 and dinner, January 22. Refunds are granted only with approval of the Director of Student Affairs upon formal withdrawal, for absence on University activities, or for extreme personal emergencies.

Semester meal tickets do not include vacation periods. Special meal tickets may be purchased before specified dates at the rate of \$3.50 per day. The amounts of such special meal tickets will be approximately as follows:

Orientation Week	\$21.00
Thanksgiving Recess	16.00
Christmas Recess	56.00
Semester "Break"	11.00
Spring Recess	16.00

Those not possessing Special Meal Tickets may buy meals during vacation periods at ala carte prices.

PAYMENT OF FEES

All charges, deposits, rent and meals for the semester are payable in full on the second day following registration. Late settlement of fees is subject to a fine of \$2.00 for each day following the date on which they first become payable. An installment contract may be arranged under which a 25 per cent payment is due upon registration and additional installments are payable for up to three (3) months following the date of registration. The installment contract service fee is \$2.00 for the contract and \$2.00 for each additional payment. Delinquent payment of installment is subject to a \$2.00 fine for each occurrence.

Refundable Charges — Refunds of the University fee, tuition fee, music course fees and campus activities fee, shall be made to withdrawing students upon formal withdrawal by or for the student, according to the following schedule:

Withdrawal within the first week—90 percent refund

Withdrawal within the first 1/3 of term—50 percent refund

Withdrawal after first 1/3 of term or semester—no refund

Health service and miscellaneous fees shall not be subject to refund

Board—The unused portion of a meal ticket, less a service charge equal to five days' meals, shall be refunded upon formal withdrawal.

Rent—Room rent is refundable, upon recommendation of the Director of the Office of Student Affairs, only in emergency cases. The amount of refund shall be determined by application of a charge equivalent to 10% of the semester rent times the number of weeks of occupancy completed.

Financial Obligations — The university withholds delinquent students' diplomas pending their final payment of debts owed to the University. The Registrar also withholds grade reports and transcripts until debts to

the University have been paid. No student owing the University money can receive honorable dismissal.

TRANSPORTATION TO THE UNIVERSITY

The Alaska Railroad gives qualified University students a round-trip ticket for the price of a one-way ticket. This applies to Summer Sessions and Home Economics Short Course students, as well as those attending regular sessions. The student must request the special rate when purchasing his first ticket. Two days prior to departure on the return trip, the student must present his ticket receipt and identification to the office of the registrar for certification of student status.

ALUMNI SERVICES

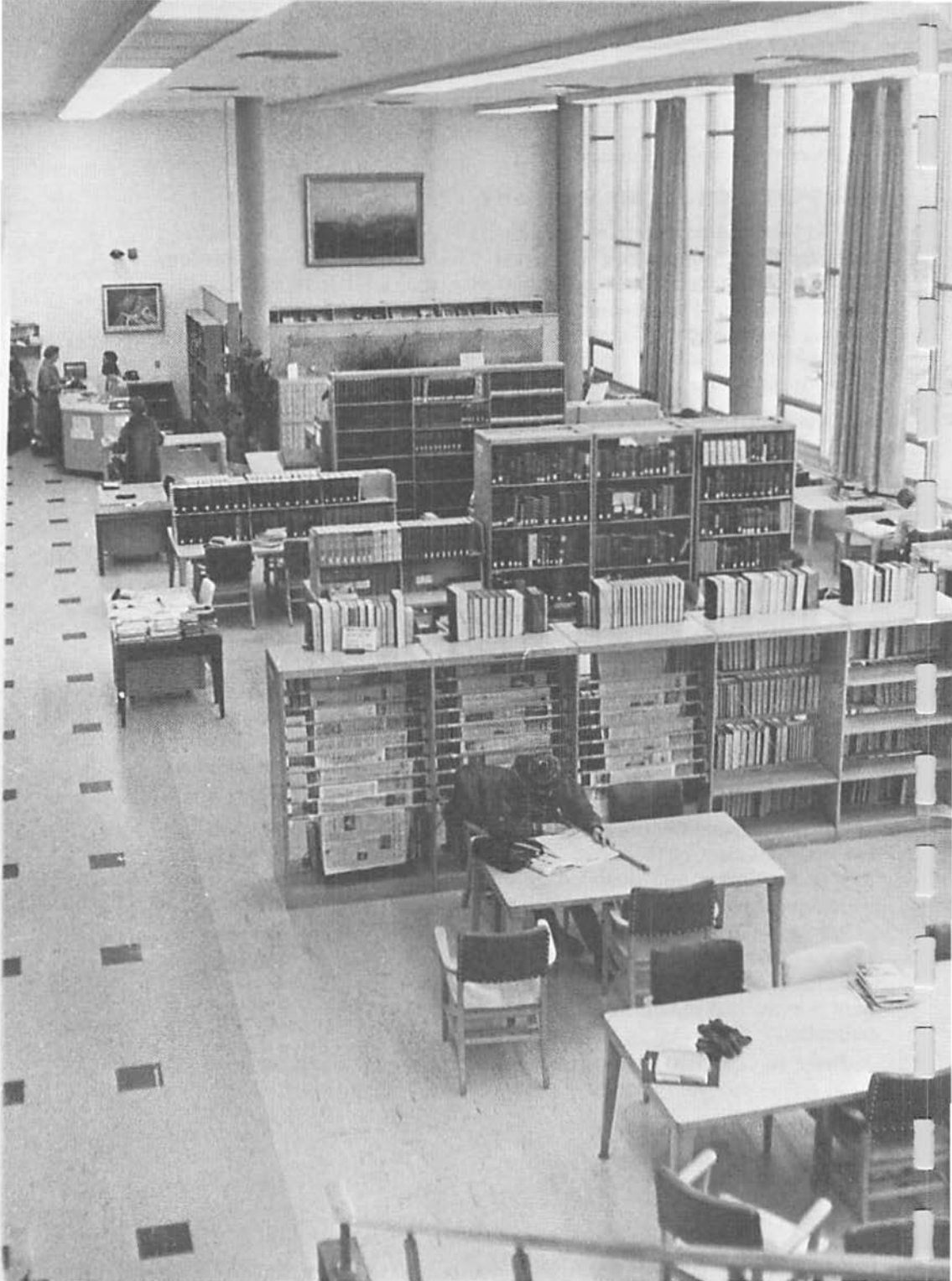
The University of Alaska Alumni Association promotes interest in the University and acquaintanceship among former students of the University in an effort to encourage continuing education among alumni; to advance the scholastic standing and the physical plant of the institution; and to preserve its history and traditions. There are branch chapters in Juneau, Seward, Anchorage, Fairbanks, Palmer, Nome, California and Washington. The Association has an office on campus to which all correspondence should be addressed: Executive Secretary, College, Alaska.

Former students who have taken credit courses at the University of Alaska, including any of its Community Colleges or other Centers, are eligible to belong to the Association. The Association has no dues but asks its members to give what they can each year to the Annual Fund. The Association publishes the Alaska Alumnus quarterly.

Graduate Placement Service is a division of the Office of Alumni Services. The essential aims of the office are to bring together in the most efficient manner employers and qualified applicants and to give the student encouragement and guidance in job selection and analysis.

All graduates of the University of Alaska are eligible for graduate placement services. Seniors and graduate students who expect to complete work for degrees during the academic year are urged to visit the Placement Service and obtain registration forms at least one semester prior to graduation.

Refer to Graduate Placement Fee for cost of placement services.



More than 140,000 volumes are contained in the University Library. A new facility to house the library is expected to be completed within the next two years.

Degrees

DEGREES OFFERED

The University offers programs leading to the following:

Undergraduate Degrees

Associate of Arts, A.A.
Associate of Business Administration, A.B.A.
Associate of Electronic Technology, A.E.T.
Associate of Science, A.S.
Bachelor of Arts, B.A.
Bachelor of Business Administration, B.B.A.
Bachelor of Education, B.Ed.
Bachelor of Engineering, B.E. (5 years)
Bachelor of Science, B.S.

Professional Degrees

Engineer of Mines, E.M.

Graduate Degrees

Master of Arts, M.A.
Master of Chemical Engineering, M.Ch.E.
Master of Civil Engineering, M.C.E.
Master of Education, M.Ed.
Master of Electrical Engineering, M.E.E.
Master of Fine Arts, M.F.A.
Master of Mechanical Engineering, M.M.E.
Master of Science, M.S.
Doctor of Philosophy, Ph.D.

GENERAL REQUIREMENTS FOR UNDERGRADUATE DEGREES

To receive a degree from the University, a student must have earned the required number of credits as well as satisfied the special requirements of his curriculum. He must attain an average grade of 2.00 (C) in all work as well as in the major field and minor fields; transfer students must maintain a 2.00 (C) average in all work at the University of Alaska.

BACHELOR'S DEGREES

All regularly enrolled, physically fit male students without military training who are citizens of the United States, under 24 years, must complete the Basic Course, R.O.T.C. (See under Military Science).

All physically qualified women students under 24 years and all physically qualified men students under 24 years who are exempt from mili-

tary training, entering the University for the first time, must enroll in physical education. This requirement of Physical Education 101-102, 201-202 for women and 105-106, 205-206 for men will preferably be completed during the first two years of attendance at the University.

Transfer students must meet the requirements of the University with respect to military science or physical education, unless they have completed the requirements of the schools previously attended.

Students must earn in residence at the University of Alaska at least 24 credits in upper division courses and at least 30 of the last 36 credits for the degree.

A regular student who has earned 60 academic credits is required to present a passing score on a library orientation test before registering again; or, in case of a transfer student with more than 60 credits, prior to his second registration at the University of Alaska.

An upper division student showing a marked English deficiency may have to pass a remedial course in English.

A maximum of 32 semester hours of work completed by correspondence may be accepted toward a degree.

A student enrolled in a bachelor's degree program may elect to graduate under the requirements of the general catalog in effect during the year of graduation or in effect at the time he originally enrolled, providing there has not been a time elapse of more than seven years.

GENERAL REQUIREMENTS FOR B.A. DEGREE

English Composition and Literature, including Engl. 101-102.....	12 credits
Foreign Language—Two years of collegiate work in one language	12-16
12 credits fulfill the requirement if all are above the 100 level.	
Social Science, including Hist. 117-118 and work in two other fields.....	15
Mathematics and/or Natural Science, Math 106-200 or Math 121-122 or a year sequence in a laboratory science plus enough credits to total 12.	
Major Specialty—(See Departmental Sections for specific requirements)..	23-26
If the major specialty is a natural or social science, electives in English or foreign languages may be substituted for the general degree requirements, if the program includes a major and at least one minor in these areas.	
Minor Specialties—2 of 12-18 credits each, or a second major to be	23-24
approved by petition.	
Military Science or Physical Education	4- 6
Electives—To bring total credit to 130 credits.	

MAJOR SPECIALTIES AVAILABLE FOR B.A. DEGREE — Anthropology, Art, Biological Sciences, Chemistry, Economics, English, French, Geography, Geology, German, History, Journalism, Linguistics, Mathematics, Music, Physics, Philosophy, Political Science, Psychology, Russian, Spanish, Speech, Sociology.

(15 cr. for
H
above
degree)

MINOR SPECIALTIES AVAILABLE FOR B.A. DEGREE — Anthropology, Art, Biological Sciences, Chemistry, Economics, Secondary Education, English, French, Geography, Geology, German, Home Economics, History, Journalism, Linguistics, Mathematics, Military Science, Music, Philosophy, Physics, Political Science, Psychology, Russian, Sociology, Spanish, Speech.

GENERAL REQUIREMENTS FOR A B.B.A. DEGREE

English Composition and Literature, including Engl. 101-102	12 credits
Humanities, including Humanities 211-212 or 6 hours in Art, Music or Philosophy	6
Behavioral Science, including courses in Psychology, Sociology or Anthropology	9
History, including six credits in American History or six credits in European History	6
Political Science	6
Economics, including Econ 121-122, 321, and 324	18
Mathematics and Statistics, including Math 110 and any approved 3 hour course in statistical methods	6
Natural Science, including Biological Science 105-106 or Chemistry 101-102 or Geology 101-102 or Physics 103-104 or any 8 hours combined from the above courses	8
Military Science/P.E.	4-6
Departmental requirements and electives to bring total credits to 130	

GENERAL REQUIREMENTS FOR A B.Ed. DEGREE

For requirements for a B.Ed. in Elementary Education, see page 76

For requirements for a B.Ed. in Secondary Education, see page 78

GENERAL REQUIREMENTS FOR A B.S. DEGREE (ENGINEERING SCIENCE)

English Composition and Literature, including Engl. 101, 102, 213	12 credits
Social Science, including Econ. 121	9
Engineering Science, including E.S. 101, 102, 111, 112, 207, 208, 331, 341, 346	23
Mathematics, including Math 106, 200, 201, 202, 302, 312	23
Chemistry, including Chem. 201, 202	8
Physics, including Phys. 211, 212	8
Military Science or Physical Education	6-4
Departmental requirements and Electives to bring total credits to 130	

MAJOR SPECIALTIES AVAILABLE FOR B.S. (ENGINEERING SCIENCE) DEGREE — Chemical Engineering, Civil Engineering, Electrical Engineering, Mechanical Engineering.

GENERAL REQUIREMENTS FOR A B.S. DEGREE

English Composition and Literature, including Engl. 101-102	12 credits
Foreign Language — A first year (101-102) or a second year (201-202) of a Language approved by the Department Head. Students with two or three years of study of an approved language may petition to have this requirement removed by examination.	0-10
Social Science	9
Mathematics	9
Physics	8
Chemistry or Biology	8
Major Specialty (See Departmental Sections for specific requirements)	
Physical Education or Military Science	4-6
Departmental Requirements, Minor Specialties, and/or Electives — To bring total to 130 credits.	

MAJOR SPECIALTIES AVAILABLE FOR A B.S. DEGREE — Anthropology, Biological Sciences, Chemistry, Fisheries Biology, General Science, Geography, Geology, Geological Engineering, Home Economics, Mathematics, Medical Technology, Mining Engineering, Physics, Wildlife Management.

MINOR SPECIALTIES AVAILABLE FOR A B.S. DEGREE — Refer to Departmental Section since some B.S. degree programs do not require minor specialties.

ASSOCIATE DEGREES

The associate degree is awarded upon the successful completion of a two-year technical or general program. The degree has its own integrity and for many people it will be their most advanced formal educational experience. For others, it will be the first undergraduate degree and a stepping stone to a baccalaureate program.

GENERAL REQUIREMENTS FOR ASSOCIATE DEGREES

English	6 credits
American Government or American History	6
At least 6 credits each in any three of the following areas:	18
(a) humanities, (b) social studies, (c) natural science, (d) mathematics, (e) other.	

Major Specialty (See Department Sections for specific requirements)20-30

Electives — To bring total credits to 60

MAJOR SPECIALTIES AVAILABLE FOR AN A.A. DEGREE — Liberal Arts, Office Administration, Vocational Arts.

GENERAL REQUIREMENTS FOR A.EI. DEGREE

For requirements for A.Et., see Page 118

GENERAL REQUIREMENTS FOR GRADUATE STUDY

Graduate study seeks to prepare the student for creative work — for all work that extends the bounds of knowledge, that cherishes and transmits knowledge, and that applies knowledge for the benefit of man. It seeks to give the student deeper insights and better understandings of fundamental principles. The graduate program is shaped to the needs of the individual student and is developed in terms of his experience, academic background, and aspirations. Earning an advanced degree entails more than the satisfactory completion of specified courses; the student must show promise and performance in productive scholarship.

MASTER'S DEGREE

As will be seen under departmental listings, programs leading to master's degrees are offered in the areas of biology, botany, business administration, chemistry, civil engineering, creative writing, environmental health engineering, education, engineering management, English, fisheries biology, general science, geology, geophysics, mathematics, mineral industry management, mineral preparation engineering, physics, wildlife management, and zoology. Students wishing to enroll for graduate study in any of these fields should obtain an application form from the Director of Admissions and Registrar's Office. The completed form and official transcripts of all previous college or university work should be returned to that office.

However, programs leading to master's degrees may be arranged on request in certain aspects of other subjects; for example, anthropology, economics, history, linguistics, etc. Students interested in pursuing studies in one of these or any other discipline not listed should write directly to the Vice-President for Research and Advanced Study.

In general, a student may be admitted if he has a bachelor's degree from an accredited institution with at least a "B" average in his major and if his major is deemed suitable for continuation of studies in the field of his choice.

Department heads in fields of interest will determine the adequacy of the student's preparation and whether or not departmental facilities are sufficient for the student's aims. Applications from students whose projected programs do not fall within a department will be reviewed by a Committee for Admissions. Committee recommendations will be transmitted to the student by the Director of Admissions.

As soon as the student is accepted, an Advisory Committee of not fewer than three faculty members will be set up to assist the student in planning and carrying out his program.

The requirement for a master's degree is a minimum of thirty semester credits, of which a maximum of twelve may be devoted to the thesis. At least nine semester credits, in addition to those earned for the thesis, must be at the 600 level. No lower division courses (100 or 200) are applicable. A maximum of nine semester credits from another institution may be transferred to the University of Alaska and applied toward a degree if approved by the Student's advisory committee and by the dean of the college in which the student is enrolled.

B is a minimum passing grade in courses not primarily for graduate students (300 or 400); C will be accepted in courses primarily for graduate students (600) provided a B average is obtained in graduate courses. Such standards are requisite for continuing study towards a master's degree.

A student may be admitted to candidacy for a specific master's degree after he has satisfied all the following requirements. 1) completed at least 8 credits of graduate study at the University of Alaska; 2) demonstrated a reading ability of a foreign language, if required; 3) received approval by the dean, if he is enrolled in a college, or by the Vice President for Research and Advanced Study, if not, of the provisional title of his thesis, if a thesis is required, and of his program of studies.

The candidate must pass a final examination, either written or oral; if a thesis is required, the examination will include a defense of the thesis. The Examining Committee shall consist of a candidate's Advisory Committee and one member of the faculty from a different college appointed by the Vice President for Research and Advanced Study.

All work toward the fulfillment of the requirements of a master's degree must be completed within seven years.

DOCTOR OF PHILOSOPHY DEGREE

No restrictions are placed on the disciplines that may be studied by students seeking doctoral degrees. There are established doctoral programs in certain aspects of geology, geophysics, oceanography, physics, and zoophysiology.

Prospective candidates in these, or other topics, should write to the Vice President for Research and Advanced Study outlining in some detail their previous training and interests for future study. Each application is reviewed by an Admissions Committee both in light of the applicant's qualifications and the faculty and facilities available on the campus relevant to the field of projected study.

The degree of Doctor of Philosophy is granted for proven ability and scholarly attainment. There are no fixed credit requirements for this degree at the University of Alaska. It is not the policy to confer this degree upon anyone whose entire academic experience has been at this University.

The student chooses a major line of study and, with the advice of his Advisory Committee, such lines of study in related fields as are necessary for achievement of a thorough and scholarly knowledge of his subject. With approval of his Advisory Committee, the student prepares a program for the degree, which, including applicable and acceptable work transferred from other institutions, shall represent approximately three full years of study beyond the bachelor's degree.

A grade average of B must be maintained in graduate course work.

Reading ability in two foreign languages is required for the doctorate. German, French, or Russian are usually taken, but alternatives may be substituted upon petition.

Admission to graduate study does not imply admission to candidacy for a degree. The student should seek admission to candidacy approximately one year before he, in consultation with his Advisory Committee, deems that he will have completed the requirements for his doctorate. A student may be accepted as a candidate by his Advisory Committee after 1) completing the equivalent of two academic years of graduate study, 2) completing at least one semester in residence at the University of Alaska, 3) meeting his foreign language requirements, 4) obtaining approval by his Advisory Committee of the title and synopsis of his dissertation, and 5) passing a qualifying examination set by his Advisory Committee.

The dissertation, which is expected to represent the equivalent of at least one full academic year's work at the University of Alaska, must be a contribution to knowledge.

After submitting the dissertation, the candidate must pass an oral examination supporting his dissertation. The examining committee will consist of a minimum of five members: the candidate's Advisory Com-

mittee supplemented by additional members appointed by the dean, when the student is enrolled in a college, and by the Vice President for Research and Advanced Study,

All work toward the fulfillment of a doctor's degree must be completed within ten years.

THESES AND DISSERTATIONS

Two copies of the thesis or dissertation, typed and bound (original and first carbon), must be filed in the University Library. Departments may require additional copies. All records of work done in connection with the preparation of theses and dissertations are the property of the University and can be released with the permission of the head of the department and the Vice President for Research and Advanced Study after having been reproduced by the University.

EXTENDED REGISTRATION FOR GRADUATE STUDENTS

A student who is working towards a higher degree must be registered. A student whose only remaining requirement is the removal of a deferred grade in Thesis or Special Topics must request the Registrar to allow him Extended Registration, at no cost, at the beginning of each semester until the deferred grade is removed. With the request, the student must state the approximate time at which he expects to complete the work. Upon receipt of such a request, the Registrar refers the request to the Chairman of the student's Advisory Committee. With his approval, the student is considered as enrolled in the current semester.



Laboratory work plays an important part in students' curriculum.

Academic Regulations

Each student will be held responsible for the regulations of the University as they apply to him.

Orientation and Placement Testing — All entering undergraduate students are required to participate in the orientation program conducted just before fall and spring semester registration. The purpose of this program is to acquaint the new student with the history, the customs, and the campus of the University of Alaska, and to aid him in the planning of a profitable college career.

All entering freshmen should have taken the examination of the American College Testing Program during their senior year in high school. Those entering freshmen for whom the University has received ACT scores will not be required (or permitted) to repeat the examination during Orientation Week. However, all new students who are entering the University with fewer than 30 hours of acceptable transfer credit and for whom the University has not received ACT scores will be required to take the test during orientation week and to pay a \$5.00 testing fee. The ACT and other placement and guidance tests must be taken before a new student with less than sophomore standing may complete his registration. On the basis of test scores, a student whose background of training appears to be deficient in areas such as English and mathematics may be required to take English A or Math A or both. In such cases, the student will be unable to complete the requirements of most curriculums in the minimum time.

A student continuing the study of a foreign language begun in high school will be required to take a placement test. If he fails to place at the level appropriate to the amount of his previous language study, he will be allowed to enroll for credit in a course that is one semester below this level. Work more than one semester below the normal level will be considered remedial and, although pre-requisite to further study, will carry no credit.

An additional fee of \$5.00 will be charged to students who take the placement and guidance tests at other than the scheduled times during orientation week.

Although transfer students are required to participate in the orientation program, they are not required to take the placement and guidance tests if they have at least sophomore standing. However, for the assistance which test scores may give the transfer student and his advisers in planning his educational program, it is recommended that he take the placement and guidance tests at the time they are administered to entering freshmen.

Attendance — Regular attendance is expected in all classes. Unexcused absences may result in a student's being dropped from the course with a failing grade. It is the responsibility of the student to establish to the in-

structor's satisfaction the validity of an excuse for absence and to work out with the instructor acceptable arrangements for making up missed work.

Class Standing — Class standing is determined on the basis of total credits earned.

Students are classified as:

Freshmen	0-29 credits
Sophomore	30-59 credits
Junior	60-94 credits
Senior	95 credits

Transfer students will be given class standing on the basis of the number of credits accepted by the University. Special students are registered without class standing.

Study Load — Students normally may register for 18 semester hours of credit; for 19-20 semester hours with the approval of the dean of the college; for 21 or more semester hours provided the student's grade point average with a full time study load for the past two semesters is at least 2.75 and a petition to carry this maximum load is approved by the Council of Academic Deans.

For the purpose of computing study loads, non-credit courses are rated the same as credit courses.

No student who has failed in any work may register for more than the number of credits tabulated in his curriculum until he has carried that number successfully for one semester.

A full-time student is one who enrolls for 12 or more semester hours of credit. Any student who qualifies for entrance and registers for fewer than 12 will be classified as "part-time" regardless of his previous standing.

Any student registered in 12 or more credits must fulfill the requirements in military science or physical education.

Any student who does not follow a prescribed course of study or curriculum leading to a specific degree will be enrolled as "interim," whether he be a full-time or a part-time student.

All "special" students are considered to be "undeclared" without class standing.

Credit by Examination — An enrolled student is eligible to petition for permission to receive credit by examination if he can provide evidence of sufficient experience or previous study pertaining to the course in question. When permission is granted, the student is required to register immediately and pay the fees of the course which has been officially approved. A course in which a student has been registered as an auditor may not be completed for credit by examination.

Change of Curriculum — A student desiring to change his curriculum may do so only at the beginning of a semester, and must obtain the written consent of the heads of the departments concerned.

Change of Registration — A student is expected to complete the courses in which he is enrolled. He may, if circumstances warrant, withdraw without penalty during the first two weeks of the course; after that time a grade of "WP" is given only if he is doing passing work and a grade of "WF" is given if he is doing failing work. After the first month of the course, a student who wishes to withdraw must submit his request by petition, which shall include the reason for the request. Student initiated withdrawals are not permitted during the last month of the semester. Elective and non-sequence courses should be dropped first; withdrawals from deficiency courses or English 101-102 may be made only upon petition. The fee for student initiated course changes is \$1.00 per course. A Change of Registration card must be obtained from the student's academic advisor.

Grading System — Only letter grades appear on the student's record and transcript. Attention is called to the following analysis:

A — An honor grade; indicates originality and independent work, a thorough mastery of the subject, and the satisfactory completion of more work than is regularly required.

B — Indicates outstanding ability, and a performance definitely above the average.

C — Indicates a satisfactory and average response to assignments.

D — The lowest passing grade; indicates work of poor quality and does not entitle the student to the recommendation of the University.

P — Indicates passing work and carries no grade points.

F — Indicates failure.

S — Indicates satisfactory completion, is used only for graduate theses, and carries no grade points.

I — Given only in cases where additional work is necessary for the satisfactory completion of the course; not given unless the work already performed is grade C or better; may be given for unavoidable absence.

The grade for work that is incomplete (I) becomes a failure (F) if the work is not completed by the end of the sixth week following the student's next registration. At the option of the instructor and head of the department offering the course, the removal of the incomplete may be postponed until the next semester in which the course is regularly given.

Def — Indicates that for good cause, as determined by the instructor, the grade in certain courses, such as thesis, may be withheld, without penalty, until the requirements of the course are met within an approved time.

WP — Given when a student makes a regular withdrawal from a course while doing passing work.

WF — Given when a student makes a regular withdrawal from a course while doing failing work. It indicates failure and is so computed in the grade point average.

Grade Points — For the completion of grade points, each credit is multiplied by a grade factor: Grade A by 4, grade B by 3, grade C by 2, grade

D by 1, and grade F or WF by 0. The record and transcript of the student show all grades received, together with all rulings on special petitions or authorized substitutions. A grade point average of 2.00 is required for good scholastic standing.

Probation and Academic Disqualification — At the end of any semester of attendance a student failing to earn or maintain a grade point average of 2.00 may be placed on academic probation. Students who fail to raise their scholastic average after being placed on probation may be academically disqualified and not permitted to re-enroll at any units of the University for one or more semesters. A disqualified student will be readmitted only upon his presentation of evidence indicating a high probability that he can do satisfactory college level work. The most obvious evidence is the completion of two or more college level courses with a grade of C or higher at another accredited institution or by correspondence.

Dismissal — A student may be dismissed for cause at any time by the President of the University.

Honor Rolls — Students who earn at least a 3.5 semester grade point average for no less than 12 credit hours are listed by the Academic Vice President on the University's Honor Roll.

Graduation — The responsibility for meeting all requirements for graduation rests upon the student.

Graduation with Honors — Students who obtain a grade point average of 3.5 will be graduated *cum laude*; 3.8 *magna cum laude*; and 4.0 *summa cum laude* provided they meet the honors as well as the general residence requirements.

In order to graduate with honors, students transferring from institutions must have been in attendance at the University of Alaska for at least four semesters with a minimum of twelve credits each semester.

AWARDS

Listed below are awards which have been established for students who demonstrate outstanding achievement in various fields and activities. Information concerning awards may be obtained from the Office of Student Affairs, from the Department of Military Science, or from the Department of Health, Physical Education and Recreation.

- American Institute of Mining and Metallurgical Engineers, Alaska Section
- American Society of Civil Engineers, Fairbanks Sub-Section of the Alaska Section
- Athletic Letters and Awards
- Marion Frances Boswell Memorial Award
- Chemistry Department Outstanding Freshman
- Druska Carr Schaible Memorial Award
- Fairbanks Garden Club Conservation Award
- Fairbanks Weavers Guild
- George M. McLaughlin Memorial
- Archie W. Shiels Prize
- Sigma Xi Club, University of Alaska
- General James Steese Prize
- Joel Wiegert Award

office. Student rooms cannot be reserved until the student is accepted by the University, through notification from the Registrar's office. Continuing students may reserve rooms during the Spring semester for the Fall semester or during the Fall semester for the next Spring semester providing that they have not been disqualified for scholastic or disciplinary reasons by the University. After being accepted and in order to secure student housing, the student should complete the Housing-Board contract and mail it immediately to the HEAD, STUDENT HOUSING, UNIVERSITY OF ALASKA, COLLEGE, ALASKA 99701, with a \$35.00 room advance. Confirmation for student housing is not assured until the student receives his copy of the contract with a receipt for his advance. Specific room assignments will be available after August 1st. Spring semester assignments are made as space becomes available. The contract for single student housing in undergraduate residence halls is for room and board. The contract for married student housing does not include board.

This advance is non-refundable. Unless written notification of late arrival is received by the Head of Student Housing from a student for whom space is reserved not later than the first day of classes in any semester, the reservation will be cancelled and the space assigned to a waiting list applicant.

Students are required to sign the Housing-Board contract from the time they enter the halls to the end of the spring semester, subject to terms indicated thereon. Students are expected to pay for the entire semester during registration; however, installment payments may be arranged.

Contracts are voided only if a student does not attend the University full-time, cancels his contract prior to August 1st, or is released by the Director of Student Affairs upon the advice of the Housing Advisory Committee because of marriage, health reasons, finances and for other emergencies as deemed appropriate.

Rent for double room approximates \$230.00 per semester and for a single room \$265.00 per semester. This rental covers all lounge, recreation room, storage room, laundry room and local telephone privileges. Students may remain in the Residence Halls during vacation periods, but during the Christmas Holidays they may be moved to one central location.

Meal Tickets—Each occupant of undergraduate residence hall is required to buy a meal ticket for cafeteria meals. Meal tickets do not include vacation periods which occur during the semester. Full payment for a semester's meal ticket is required at registration time. The first meal covered by meal tickets is the first day of upperclass registration.

The University Commons, completed during the summer of 1963, provides beautiful and functional dining, food preparation, and lounge facilities for all students living in residence halls. Although most meals are served cafeteria style, table service for as many as 570 students is provided on special occasions.

All members of the undergraduate residence halls are required to contract for their meals both semesters at the University Commons. Breakfast, luncheon, and dinner are served daily throughout the school year. Although meal service continues during the Thanksgiving, Christmas and spring recesses for the benefit of those students who remain on the campus at those times, the cost of meals during such periods is not included in the board contract.

In order to provide students with meals of high quality at minimum cost, it is essential that the staff be able to plan its food purchases and preparations for relatively constant numbers. Therefore, it is not possible to provide special diets or to give refunds for meals missed. If, for reasons such as illness, a student who has contracted for meals is unable to report for them for more than five consecutive days, a refund for the sixth and subsequent days may be recommended by the Office of Student Affairs. Refunds are also granted to students participating in authorized University functions where meals are not provided.

STUDENT HEALTH SERVICE

Preventive and educational as well as protective health services are the concern of the University and are administered by the Student Health Service. Supervision and limited out-patient treatment during the day are the responsibility of the Registered Nurse at the Health Service. Physicians are available on campus two hours daily Monday through Friday for more extensive treatment. However, the Health Service does not attempt to provide complete medical care nor does it operate as an emergency medical center, although personnel are advised to keep the center informed.

In addition, the Nurse reviews mandatory health examinations for new students, keeps records up to date on all students, does follow-up on medical conditions as needed, provides out-patient service during the day and advice for emergencies at night.

Full-time students receive special rates for mandatory health insurance which provides hospital, medical and surgical benefits. The coverage is extensive, inexpensive and compulsory for all students carrying 12 or more hours and under 26 years of age. For all others it is optional up to the age of 35. It is designed to supplement, but not to replace Health Service care. Brochures containing details of the policy are available at the Health Service.

FINANCIAL AIDS

Three types of financial aid are available at the University of Alaska:

- 1) Grants (Scholarships)
- 3) Loan funds
- 3) Part-time student employment

1) Grants (Scholarships). At the present time grants are awarded only to Alaska high school seniors and to currently enrolled University of Alaska students. Non-residents must successfully complete at least one semester of academic work at the University of Alaska before they become eligible to apply for scholarship assistance. Students who are enrolled at any of the University's Community Colleges and who plan to continue their study on the main campus at College during a forth-coming semester are invited to apply.

The Educational Opportunity Grants Program of the Department of Health, Education, and Welfare was initiated at the University of Alaska in the Fall of 1966. These grants are awarded on the basis of acute need and are renewable.

Bureau of Indian Affairs grants are processed and administered through the Office of Student Affairs. Alaska natives (Eskimos, Indians, Aleuts) apply according to routine financial aid request procedures.

Applications from currently-enrolled students are accepted twice each year before March 1 and November 1. Applications from Alaska high school seniors are accepted once each year before March 1 and are reviewed only after the applicant's admission to the University has been approved and after his American College Test scores have been forwarded to the Office of Student Affairs. Requests coming in after these deadlines will not be considered. No grants are available for the summer session.

These awards are based primarily on need. The amount of the grant is based upon information supplied on the College Scholarship Service Parents' Confidential Statement form. Entering students seeking financial assistance are required to submit a copy of the Parents' Confidential Statement (PCS) form to the College Scholarship Service, designating the University of Alaska as one of the recipients by March 1 or November 1. The PCS form may be obtained from the University, secondary schools or the College Scholarship Service, P. O. Box 176, Princeton, New Jersey 08540 or P. O. Box 1025, Berkeley, California 94704.

Although need is the primary basis upon which these grants are given, demonstration of academic competence, personal characteristics, and contributions to the University community are evaluated.

Recipients at the University of Alaska forfeit entire grants which are to become effective in a forthcoming semester if they earn below a 2.0 grade point average in the current semester. Grants are automatically forfeited by recipients who do not enroll during a semester in which it is in effect, who enroll for less than a fulltime program of studies without special arrangement with the scholarship program coordinator, who are placed on disciplinary probation or who are suspended from the University for disciplinary reasons.

Questions concerning application forms, specific grants, or selection procedures should be directed to the Office of Student Affairs.

Although numerous grants are awarded annually to students at the University of Alaska by various individuals and organizations, the list below includes only those which were administered by the University's Financial Aid Committee during the 1966-67 school year:

Name of Scholarship	Number	Total Amount
AIME, Southwestern Alaska Section	One	\$ 400
Alaska Insurance Agency "Major George W. Albrecht Memorial"	One	100
Alaska National Guard Officers Association	One	500
Alaska Native Scholarships	Varies	15,900
Alaska Scottish Rite of Freemasonry	One	300
Alaska State Employees Association "President John F. Kennedy Memorial"	One	250
American Association on Indian Affairs	One	1,000
Covenant High School Alumni Association "Stanton Oyoumick Memorial"	One	50
Educational Opportunity Grant	Varies	15,053
Fairbanks Kiwanis Club "Andy Anderson Memorial"	One	500
First National Bank of Fairbanks	Two	1,000
General Motors	Four	3,350
Henderson Estate, John B.	Four	1,600
Hess Estate, Harriet	Two	880
Hess, Estate, Luther	Three	1,200
Hoffer Glass Company	One	125
Music Shop of Fairbanks "Grace Hoitt Scholarship in Music"	One private music lesson per week	
International Brotherhood of Electrical Workers		
Local #1533 Building Corporation	Two	800
Kennecott Copper Corporation	Two	1,000
Ladies of the Golden North	One	500
Lathrop Estate, Austin E.	Varies	4,865
Leach Estate, Frank M.	One	100
Lewis Fund, Charles W. and Hortense W.	One	500
McIntosh Estate, Jessie O' Bryan	Varies	14,133
McKinnon Scholarship, Emma	One	400
National Bank of Alaska	Varies	2,000
National Electrical Contractors Association	One	500
Noel Wien Scholarship	One	500
Northern Commercial Company	One	500
Phipps, Margaret R.	Three	450
Pioneers of Alaska Memorial, Igloo #4	One	300
Pressor Foundation	One	400
Radio Corporation of America	Two	800
Ralston Purina Company	One	500
Romick, Mr. & Mrs. A. J.	One	500

Sears Roebuck Foundation	Four	1,200
Sears Roebuck Foundation (Home Economics)	One	300
Sheppard Trading Company	One	500
State Room Scholarships	Varies	15,000
Texaco, Inc.	Two	1,000
Unalakleet PTA "Senator William E. Beltz Memorial"	One	150
United States Smelting, Refining and Mining Company	One	250
University of Alaska Alumni Association	One	300
Women's Athletic Association	One	100

2) Student Loan Fund. There are three different types of loan programs:

Emergency Loans are available to all regularly enrolled full-time students whose financial need is modest and temporary. Although emergency loans require no co-signer, they are limited to \$100 for not more than 30 days and interest is in the form of a flat service charge of \$2.00 per loan or 50¢ if repayment is made within 10 days of the date of borrowing.

The **University Loan Fund** is available to regularly enrolled students who have successfully completed one semester as a full-time student. Loans are limited to \$500 and are payable prior to the forthcoming September 1. The interest rate on the money borrowed from the University loan fund is 4% per annum. The loan requires a co-signer (not a faculty member or fellow student), and will be made for University expenses only such as room, board, fees and books.

The University Loan Fund represents the pooled resources of several separate loan funds given to the University over a period of many years:

Anchorage Women's Club (1926)	Anchorage High School (1958)
American Military Engineer Revolving Loan Fund	Anchorage High School PTA (1959)
Lawrence C. Phipps (1930)	Sheils-Timson (1936)
Fairbanks High School Alumni (1932)	Leopold F. Schmidt (1938)
First National Bank (1945)	Palmer Associated Students (1941)
Phi Tau Gamma (1953)	Frank Slaven (1944)
Palmer Community (1953)	Mr. & Mrs. Walter G. Culver (1959)
Glenn Carrington (1953)	Verne E. Roberts Memorial (1960)
Larry Doheny (1953)	James Stanley Rodebaugh Memorial (1960)
Pioneer Women of Alaska (1954)	James E. Nankervis Memorial (1961)
Women's Auxiliary #4, Pioneers of Alaska (1957)	Herman Turner Memorial (1961)
Dave M. Dishaw (1958)	

Rotary Club of Fairbanks (1963)
 Southern California Alumni (1963)
 Arthur A. and Anne Shonbeck
 Memorial (1964)

Marianne Casson Memorial Fund
 (1965)
 Ketchikan Communication
 Committee (1966)

The National Defense Education Act loans are always available to a limited number of qualified students. Undergraduate students may borrow up to \$1,000 a year or \$500 maximum per semester, graduate students \$1,500 per year. Total funds available to a student for his undergraduate work are limited to \$5,000. These loans are repayable nine months after a student discontinues or completes his education or finishes his military obligation or service with the Peace Corps. For those who become teachers, one-tenth of the amount borrowed is canceled each year for five years, representing as much as 50% of the original loan. Interest rate is 3% per annum. Loans must be paid within ten years.

The Clarence J. Rhode Memorial Scholarship Loan Fund was initiated by the Territorial Sportsmen, Inc. of Juneau. Junior, senior and graduate students in Wildlife Management are eligible for loans up to \$300.00, under terms similar to those of the Student Loan Fund. The head of the Department of Wildlife Management administers these funds.

The Juneau Women's Club has a \$5,000 loan fund on deposit with the University of Alaska for the use of Greater Juneau Borough High School graduates.

Mr. Ralph R. Stefano, Consulting Engineer of Fairbanks, has established The Stefano Loan Fund for the purpose of furthering instruction in Mechanical Engineering. Loans may be made from this money to deserving students in Mechanical Engineering. The Dean of the College of Mathematics, Physical Sciences and Engineering administers these student loans.

The Society of American Military Engineers Revolving Loan Fund enables students in Engineering, Science and Mathematics to borrow money to continue their education under terms similar to those of the University Loan Fund. Application is made through the Office of Student Affairs.

3) Part-time Employment. Two types of work opportunities are available:

a) Listings are available in the Office of Student Affairs for both on-campus and off-campus jobs. Students interested may apply at the office for information but must apply for the position themselves. The University does not contract work for students although it may make recommendations to employers.

b) The University actively participates in the Work-Study program of the Economic Opportunities Act. This program is designed to provide work opportunities for students with acute financial problems. The

University determines student eligibility for this program on the basis of family income. Under this program students may work up to fifteen hours a week during the school term and forty hours per week in the summer. Most of the work opportunities are on-campus and can be related to a student's professional or vocational interest. A student may inquire about this program at the Office of Student Affairs, Bunnell Building.

In most cases financial aids are combined so that a student's financial need may be met from several sources: for example, 1/3 from a grant or scholarship, 1/3 from loans or savings, and 1/3 from work.

CO-CURRICULAR ACTIVITIES

All students are encouraged to participate in at least some of a wide range of co-curricular activities. Many of them, such as the student government, the choral groups, band, dramatics, student newspaper, year-book radio station, and intercollegiate and intramural athletics are open to academically qualified students regardless of their field of study. Others are activities or organizations in which participation is dependent upon enrollment in a particular curriculum. All may make meaningful contributions to the student's educational experience.

To encourage students to maintain proper balance between their curricular and co-curricular activities, and to protect the best interests of the University, the following code which determines eligibility for participation in all co-curricular activities and organizations has been adopted:

1. All members of University organizations must be students who are enrolled for twelve or more semester hours of credit.
2. Students who participate in co-curricular activities must maintain a cumulative grade point average of 2.00 or higher and must not be on disciplinary probation.
3. Additional eligibility requirements for members and officers in University organizations and co-curricular departmental activities may be established by the organization or department. Copies of these regulations shall be kept on file with the Office of Student Activities. The responsibility for enforcing eligibility regulations shall rest with the organization or department.
4. The Academic Vice President and the Director of Student Affairs shall review special cases or unusual circumstances regarding eligibility regulations and, with the approval of the President of the University, may make exceptions to the above rules.

Student Union Building — Dining, recreational, and co-curricular facilities are contained in Constitution Hall, the official name of the Student Union Building, which was completed in 1955. It was the site of the convention of Territorial delegates which drafted the Constitution for the State of Alaska. This building provides temporary facilities for a variety of student services and activities. On the ground and main floors are a

book store, game room, barber shop, coat room, and a lounge with television. The Snack Bar, which serves all members of the University community, occupies the entire second floor of Constitution Hall. Located on the third floor are offices of the student government, the student publications, the director of student activities, the speech, radio and drama facilities, and the alumni and graduate placement office.

STUDENT BEHAVIORAL STANDARDS

Education at the University is conceived as training for citizenship as well as for personal self improvement and development. When a student enrolls he acquires a special status and prestige and assumes commensurate responsibility as a citizen in the University community. As long as he remains a student, he represents the University — whether on or off the campus.

It is the University's policy to provide its students as much freedom of individual expression and action as is consistent with their maximum growth and with the welfare of the University. Students are expected, individually and collectively, to maintain this freedom by the exercise of that self-discipline which is imposed by a sense of social responsibility. Most students find it relatively easy to adjust to the privileges and responsibilities of the University citizenship. For those who find this process more difficult, the University attempts to provide such counsel as the student needs to gain insight and confidence in adjusting to his new environment. In some cases, when a student is unable or unwilling to assume his social responsibilities as a citizen in the University community, the institution may terminate his enrollment.

In order that new students become fully informed on the University's expectations specific rules and regulations will be announced during the orientation sessions preceding registration for each semester. Printed copies of these rules and regulations are available for the guidance of students in the Office of Student Affairs. To those who live in University residence halls, manuals containing housing regulations will be distributed at the time rooms are occupied.

University regulations are designed to help the student work efficiently in his courses and develop a high standard of character and citizenship. They are not designed to ignore individuality, but rather encourage students to formulate rules for their own guidance and develop methods of enforcing the rules.



New dormitories for men and women are located on a wooded knoll overlooking the Tanana Valley. A dining complex is planned between the two buildings.



Winter time on campus is a time for ice and snow sculpture. This ice arch was built by engineering students to test the strength of ice.

The growing Arctic Research Center, situated in the West Ridge area on the main campus, includes facilities and programs devoted to the study of the adaptation of man, animal and plant to the arctic environment.



Research and Advanced Study

The research programs of the University of Alaska take advantage of its unique location in the sub-arctic of interior Alaska, but with easy accessibility to the oceans from the Pacific to the Arctic; its accessibility to glaciers and permafrost areas; and its location near the auroral zone, the region in which maximum effects are seen from the bombardment of the earth by charged particles from the sun.

In addition to research which is carried out in the academic departments, the University has several institutes and associated activities.

Alaska Agricultural Experiment Station — With the United States Department of Agriculture the University conducts a joint agricultural research program in the State. A joint Director administers the program from the Experiment Station headquarters at Palmer in the Matanuska valley.

Field research is concentrated at the Matanuska Experiment Farm seven miles west of Palmer and at the Fairbanks Experiment Farm a mile west of the University. A fur experiment farm is also operated near Petersburg in southeastern Alaska. Because of varied environments found in Alaska, many plant and soil studies are scattered throughout the potential farming area, where the work is accomplished in cooperation with farmers and homesteaders.

Alaska Cooperative Wildlife Research Unit — The Unit is one of several located at land grant colleges and universities. The Alaska Unit is jointly sponsored and financed by the University of Alaska, the Alaska Department of Fish and Game, the U.S. Fish and Wildlife Service, and the Wildlife Management Institute. The Unit provides technical and professional training in wildlife management, research, education, and administration. The research program of the Unit includes ecological and management investigations of big game, waterfowl, furbearers, and upland game species.

Graduate work leading to the advanced degrees in wildlife management may be performed at the Unit in co-operation with the Department of Wildlife Management.

Arctic Environmental Engineering Laboratory — The Laboratory was established July 1, 1965 as a department of the College of Mathematics, Physical Sciences and Engineering. The purpose of the Laboratory is to (1) gather information necessary for the solution of Arctic and sub-Arctic engineering problems, (2) perform research where information is not otherwise available, (3) provide challenging problems and a stimulating

environment for graduate student research, and (4) assist in the development of the Arctic regions by providing engineering data and trained personnel for up-to-date economical applications of science to specialized human needs.

Arctic Research Laboratory, Point Barrow — Under contract with the office of Naval Research the University operates the Arctic Research Laboratory. Laboratory facilities are maintained, and scientific teams from other universities and organizations carry on arctic research problems there.

More than 300 scientists from many of the leading universities of the world made use of the extensive facilities of the Arctic Research Laboratory last year.

Geophysical Institute — The Institute was opened on July 1, 1949, as a department of the University. The 79th Congress of the United States had established the Institute, and the 80th Congress appropriated funds for the construction of the present laboratory and associated houses. The Geophysical Institute has grown from a modest program of auroral observations commenced in 1929 to its present activities embracing many fields of arctic and sub-arctic research.

The Institute's purpose is to advance knowledge of the earth and its environment in space. Emphasis is placed on studies of the upper atmosphere and the solar-terrestrial relationship using a network of ground stations and rocket-borne instruments. Programs are also established in meteorology, glaciology, seismology, vulcanology and tectonic physics. In addition to the main office building located on the campus, the Institute operates a number of field sites in Alaska and elsewhere, and participates in Antarctic research. The present staff numbers approximately 200, including some 30 graduate students who obtain their research training at the Institute. Financial support is obtained mainly through Federal grants and contracts.

The Director of the Geophysical Institute is chosen by the Board of Regents upon the recommendation of the president of the University, subject to approval by the president of the National Academy of Sciences.

Institute of Arctic Biology — Pursuing recommendations as to its prospective national value by a committee of eminent biologists, the Institute was established by the Alaska Legislature in 1963 for studies of life in the extreme climatic changes of arctic and sub-arctic regions. The Laboratory of Zoophysiology, the first component, began operation in 1962 and is now staffed by some 25 persons. It is located in the new BioSciences Building with appropriate services and facilities for field and laboratory investigations on Alaskan animals. Facilities are in preparation for studies of man (human ecology) and plant (plant physiology) of arctic and sub-arctic environments. Visiting scientists are received in the laboratories to which their investigations pertain. Opportunities for pre- and post-doctoral studies are provided.

Institute of Marine Science — The Institute was authorized in 1960 by the State Legislature. Its purpose is the advancement of knowledge of the sea, with particular emphasis on problems of the northern regions. A program of education and research in biological, physical and chemical oceanography are all included within this broad scope. Sea-going and laboratory facilities are available at the Douglas Marine Station, situated some five miles from Juneau. Campus activities are centered in a new laboratory, completed in January, 1963. The Institute operates the 80-foot Research Vessel ACONA. Scientists are invited to request permission to work in residence.

Institute of Social, Economic and Government Research — The Institute was authorized by the State Legislature in 1961. Its purpose is to contribute to an advancement of knowledge in the fields of business, economics, and government with particular emphasis on conditions in Alaska and the northern part of North America.

Institute of Water Resources Research — The Institute was established in May, 1965, and is the youngest of the research institutes at the University.

The Institute has no building or laboratory facility as such but it administers and coordinates many of the water resources research projects which are carried out throughout the campus. The Institute staff works very closely with the other four institutes in addition to the departments of Chemistry, Geology, Environmental Engineering, Wildlife Management, etc.

Mineral Industry Research Laboratory — The 1963 Alaska State Legislature authorized the establishment of a mineral industry research program at the University of Alaska. The purpose of the Laboratory is to conduct appropriate applied and basic research in various areas of the mineral industry that will aid in the further utilization of Alaska's mineral resources. Research is conducted in facilities of the College and co-ordinated with graduate student academic programs.

STATE AND FEDERAL AGENCIES ON CAMPUS — ASSOCIATED WITH THE UNIVERSITY OF ALASKA

Alaskan Geology Branch of the U.S. Geological Survey — This branch conducts a program of geological exploration and research in Alaska. Some of the functions are areal geologic mapping; studies and evaluation of metallic, nonmetallic, coal, and oil deposits; regional studies of structure and stratigraphy; detailed studies of selected type-areas; application of geology to engineering and related problems; and research in the use of new geologic methods. The Alaskan Geology Branch office has a complete file of Alaskan maps and geological reports available to the public for use in the Office.

Alaska Department of Fish and Game — The purpose of the Alaska Department of Fish and Game is to assist in fish and game protection, research, restoration, propagation, and increase in the State of Alaska.

Until recently several biologists of the Department were stationed on the campus and it is hoped that suitable facilities will again be available for their use as a result of the current building program.

There is close collaboration between the University and the Department both in research and teaching (see Alaska Cooperative Wildlife Research Unit).

State Highway Testing Laboratory — The Alaska State Division of Highways operates a road materials laboratory in conjunction with the Department of Civil Engineering. The State provides equipment and personnel for routine testing of highway materials and for highway research.

U.S. Coast and Geodetic Survey — The College Magnetic and Seismological Observatory is operated by the United States Coast and Geodetic Survey, with the main facility on the west ridge of the University campus and an outpost facility on Grenac Road. Originally constructed in 1947, the Observatory has grown to 19 buildings and operates 28 instruments that continuously gather data for studies in the fields of geomagnetism and seismology.

The Observatory monitors seismic activity 24 hours a day and is part of the Pacific Seismic Sea Way Warning System with headquarters in Honolulu, Hawaii. It plays a great part in keeping the people of Alaska informed of current earthquake activity and informing scientific organizations of the occurrence of major world wide magnetic events.

During the last several years the Observatory has been participating in cooperative research projects with University scientists, (principally of the Geophysical Institute).

The Observatory is also responsible for overseeing the operation of the Barrow Magnetic Observatory at Point Barrow in cooperation with the University's Arctic Research Laboratory.

United States Forest Service — The Northern Forest Experiment Station has established a branch laboratory on the campus. A growing research staff is conducting investigations on forest management, fire, entomology, and other aspects of subarctic forest ecology. This laboratory is to be the center for the Station's activities in interior and northern Alaska; although field work is conducted throughout the region, many investigations will be centered on the Bonanza Creek Experimental Forest about 35 miles from campus.

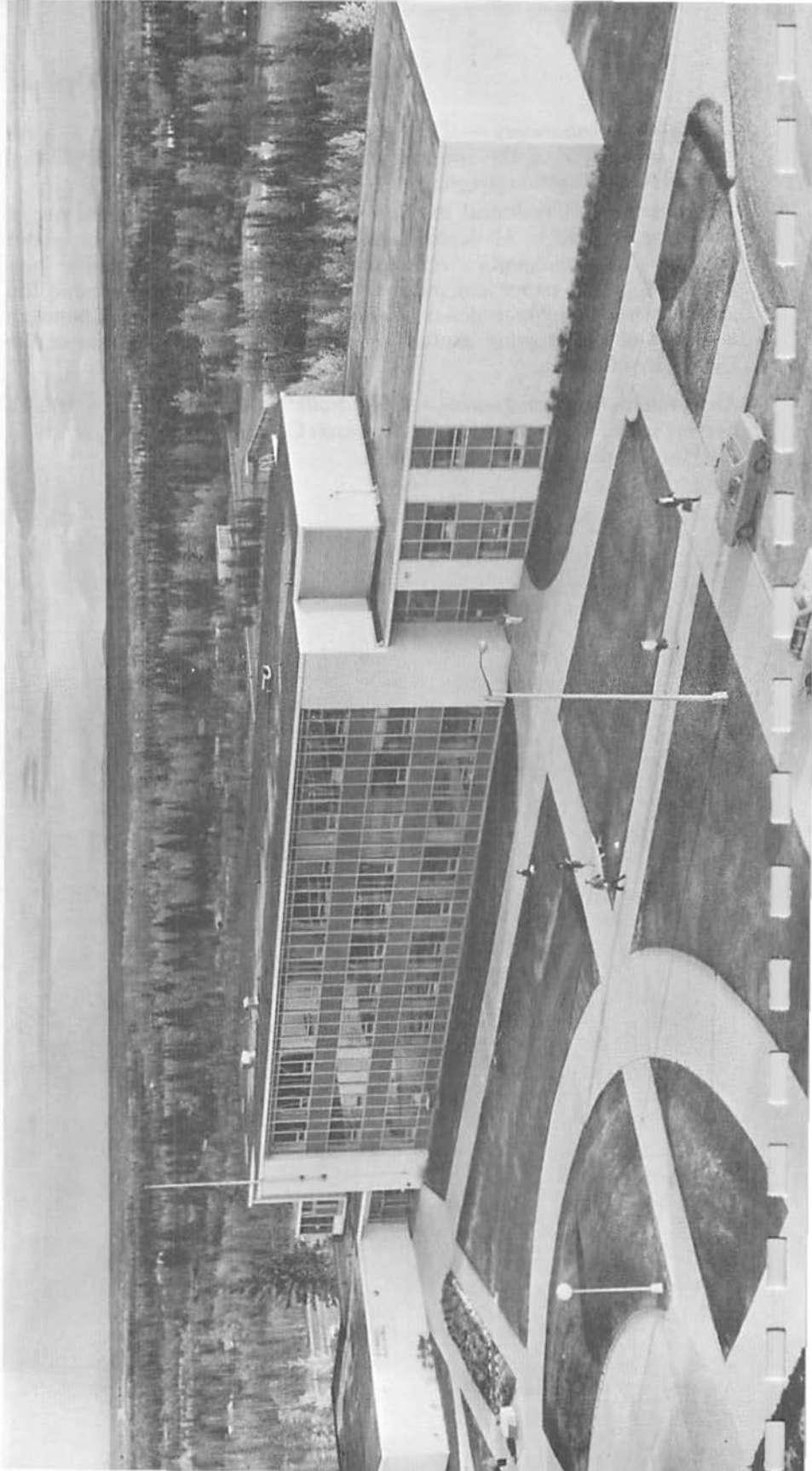
The overall purpose of the research conducted by the Forest Experiment Station is to supply the land manager with the most efficient means of growing, protecting and harvesting timber crops in a manner most compatible with other land uses.

Alaska Water Laboratory — This new 2.5 million dollar facility is a regional laboratory of the recently established Federal Water Pollution Control Administration (Department of the Interior).

Research and technical assistance on water pollution problems of particular concern to Alaska are being investigated. The effect of wastes discharged by communities, rural families, native villages, fisheries, lumber, mining, and paper and pulp industries on humans and aquatic life are problems being considered by the professional staff. This laboratory is a part of the growing Arctic Research Center on the campus of the University of Alaska.

Arctic Health Research Center — Being built by the U.S. Public Health Service in the University's Arctic Research Center, this building is scheduled for completion in the fall of 1966.

Bunnell Building, named after Charles E. Bunnell, first president of the university, houses central administrative offices, classrooms and the university library, located in wing at right.



Division of Statewide Services

The Division of Statewide Services makes available to residents of the State University courses, educational programs, and special services. The Division operates an Extension Center in Arts and Crafts, a statewide Civil Defense Education Program, and many of the programs available to Alaskans under such federal legislation as the Economic Opportunity Act, the State Technical Services Act, and the Higher Education Act of 1965, in addition to the following on-going programs.

Community Colleges — The Division of Statewide Services administers the following community colleges: Juneau-Douglas Community College, Ketchikan Community College, Sitka Community College, Kenai Peninsula Community College, and Matanuska-Susitna Community College.

Through these colleges the University offers collegiate courses for academic credit. The courses and instructors are approved and supervised by the University. All University courses carry residence credit. In addition, each community college offers vocational and interest courses under the sponsorship of the local school district. These courses do not carry University credit.

For detailed information write to the Resident Director of the Community College in which you are interested or the Dean of the Division of Statewide Services, University of Alaska, College, Alaska.

Evening Classes and Correspondence Study — The Department offers residence credit courses on the main campus during the evening, at military installations, and in other locations throughout the state not served by a community college or the Anchorage Regional Center, and correspondence courses.

The Department also coordinates the grading of the United States Armed Forces Institute Correspondence Course Lessons submitted by military personnel in Alaska.

Catalogs pertaining to Department activities are available by writing to the Department of Evening Classes and Correspondence Study, University of Alaska, College, Alaska.

Summer Sessions, Conferences and Short Courses — The University holds three- and six-week summer sessions on the campus at College and at most of the community colleges. A wide range of courses are offered for both graduate and undergraduate credit. Courses of study are open to both men and women who are (1) candidates for graduate or undergraduate degrees, or (2) unclassified students wishing to take special courses

or desiring intellectual enrichment without reference to a degree. A maximum of seven hours of credit may be earned during the six-week session and three hours of credit may be earned during the three-week session.

Of special interest are various workshops, institutes, conferences and lectures conducted by specialists, with Alaskan aspects of the subjects presented when possible. A post-session Workshop on Alaska includes anthropology, education, history, literature, art, agriculture, and wildlife, consisting of lectures by authorities, demonstrations, and field trips.

Special workshops and institutes open to high school age students are also presented. These include the Music Camp, and a Youth Leadership Conference.

The summer sessions faculty is composed of members of the regular University teaching staff, supplemented by outstanding visiting professors.

An extensive recreation program is planned for summer sessions students at College. Typical recreational activities include trips to Eskimo and Indian villages, gold-panning expeditions, hiking, dances, movies, and a riverboat excursion.

The Summer Sessions Catalog, which includes a listing of courses to be offered, is available after March 1 of each year from the Department of Summer Sessions, Conferences and Short Courses.

The University, through this Department, also conducts educational conferences and short courses throughout the State.

Summer Institutes — Proposals are prepared by University faculty members and submitted each year to various governmental agencies and private foundations which provide funds for special summer institutes. Under a grant from the National Science Foundation, an institute for teachers of science and mathematics and a summer training program for secondary school students has been held on campus each summer for several years. More recently, summer institutes for teachers of French and Counseling and Guidance were financed by the National Defense Education Act.

Summer Institutes are usually conducted for an eight-week term, and participants may ordinarily earn eight hours of credit. Institutes are usually open to both residents and non-residents of the state of Alaska.

Mining Extension Program — The Mining Extension Program, supported by state appropriations, consists of three short courses: a four-week or five-week basic prospecting course which emphasizes the various methods of prospecting; a two-week geochemical prospecting course which emphasizes the use of chemical analysis in prospecting; and a two-week geophysical prospecting course. These courses are offered each year in various communities in Alaska and are open to all persons without regard to previous training or academic qualifications.

The Mining Extension Courses are designed to give basic training in various phases of the mineral industry and to enable prospectors to find and explore ore deposits. An appropriate certificate is awarded to students who satisfactorily complete the respective course of study.

For additional information, contact the Department of Summer Sessions, Conferences and Short Courses, University of Alaska, College, Alaska.

Fisheries Extension Program — Fisheries Short Courses, covering various aspects of commercial fishing, are held in commercial fishing centers throughout the state. These courses present information on fishing gear and materials, fisheries technology, hydrology, biology and pollution. Courses taught in remote areas of the state include lectures and demonstrations on fisheries biology, fish spoilage, proper care of fish, netting materials used by fishermen, and maintenance of equipment. An appropriate certificate is awarded to students who satisfactorily complete the course.

For information contact the Department of Summer Sessions, Conferences and Short Courses, University of Alaska, College, Alaska.

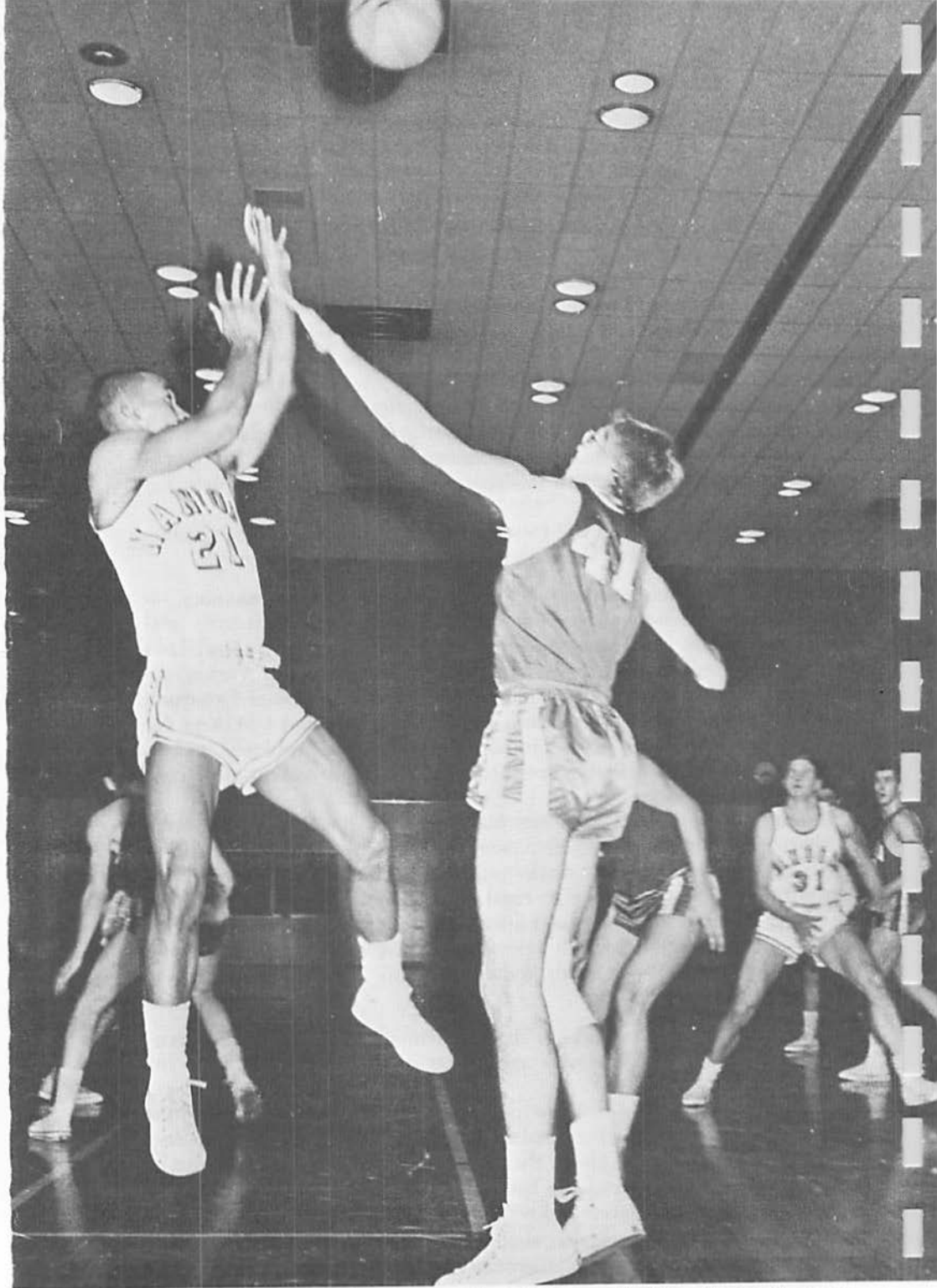
Cooperative Extension Service in Agriculture and Home Economics — The program is a cooperative educational service of the University and the United States Department of Agriculture. District offices and field staff are located in Fairbanks, Palmer, Juneau, Homer, Anchorage, Nome, and Aniak. University Extension specialists and district Extension agents extend the results of research by the University and USDA to the public. They help local people to identify and solve problems, and to apply the results of scientific research to the improvement of farms, homes and communities.

Extension's traditional audience has been rural people. Today, with no sharp dividing lines between rural and urban interests, Extension agents also serve consumer, marketing, and agri-business groups. They help citizens of the state to plan rural civil defense programs and to organize for broader economic and social development. Their teaching is carried out informally through television, radio, newspaper and newsletter media, publications, farm and home visits, special interest meetings, and short courses.

Audio-Visual Communications — The Department of Audio-Visual Communications is an all-University and State service which supports instruction.

The Department has a large collection of educational films, filmstrips, tapes and slides that are available to the University faculty, groups, and schools throughout the State. The Department administers the audio-visual materials of the State Department of Education for use in schools throughout interior and northern Alaska.

Requests for the film catalog should be mailed to the Department of Audio-Visual Communications, University of Alaska, College, Alaska.



Players scramble for the ball in intra-squad basketball game. The University competes on an intercollegiate level in basketball, swimming, skiing, rifle and hockey.

Anchorage Regional Center

The Anchorage Regional Center, activated on July 1, 1966 by action of the Board of Regents and administered by the Office of the Provost, has responsibility for coordinating all University of Alaska educational programs in the Anchorage area. In seeking to fulfill the University's responsibility for meeting public higher education needs in this most populous area of the State, the Anchorage Regional Center operates several related programs.

The Anchorage Community College, established by the University of Alaska in cooperation with the Anchorage School District under specific statutory authority, began operations in February, 1954. The College offers an extensive program of lower division academic programs including Associate Degrees, all carrying resident University credit. Some upper division courses under the framework of the Anchorage Regional Center are placed at the Anchorage Community College. Vocational-technical and interest courses are offered under school district sponsorship. Extensive counseling and testing services are provided. A Community College Director serving under the Office of Provost has responsibility for all Community College operations. Currently the College operates primarily on a late afternoon and evening basis in school district and other rented facilities. The first phase of a separate Anchorage Community College facility is now under construction on an 87-acre site and will be ready for use in September, 1968.

Since 1949 the University has provided evening class academic offerings at the Anchorage area military bases. Through the Elmendorf - Ft. Richardson Unit, operated under a Program Director, the offerings encompass lower division and upper division courses including programs leading toward a Bachelor's Degree in the education, history, and business administration fields. Although the program largely serves military personnel and dependents, the adjacent civilian community also may enroll in the one-base programs, and likewise military personnel can and do enroll through the Anchorage Community College.

The teacher education program in the Anchorage area includes provision for cadet teaching and completion of a Bachelor's Degree as well as meeting certification requirements. A few graduate level courses are offered which, along with applicable upper division credits, enable persons to complete more than half of a Master's Degree program in education through the Anchorage facilities. Courses are placed at the Elmendorf - Ft. Richardson unit and at the Anchorage Community College dependent on space available and the persons to be served.

A full-fledged Master's Degree in Engineering Management can be earned in Anchorage. A resident engineering instructor supplemented by commuting instructors from the main campus covers the entire program. Courses are held at the Anchorage Community College.

The Anchorage area programs, except Engineering Management, are offered on a tri-mester basis. A small cadre of full-time instructors supplemented by an extensive group of well-qualified part-time lecturers, all approved under University standards, meets the instructional needs.

The Provost's office coordinates schedules and programs in the Anchorage area to provide full utilization of staff and facilities and determines placement of instructors and courses at the operating units. The Provost, directly responsible to the President, is also designated as Dean of the Anchorage Community College. The Provost provides liaison between the main campus and all Anchorage operations as well as providing for broadened public information and public involvement in the Anchorage area.

Offices of the Anchorage Regional Center are located at 1820 West Northern Lights Boulevard.

Colleges of the University

Arts and Letters

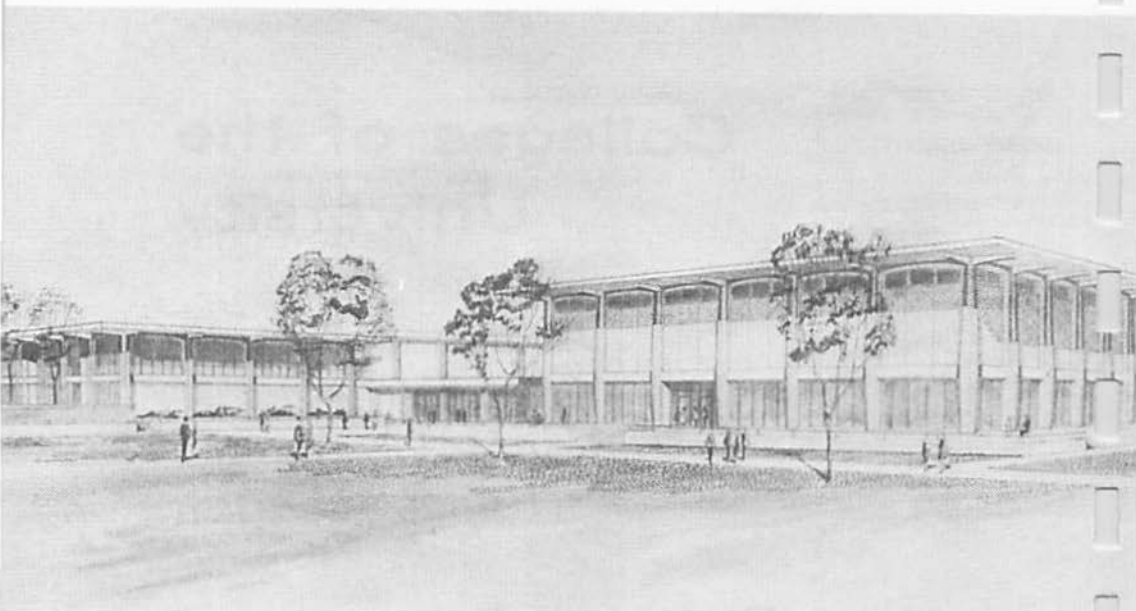
**Behavioral Sciences
and Education**

**Biological Sciences and
Renewable Resources**

**Business, Economics
and Government**

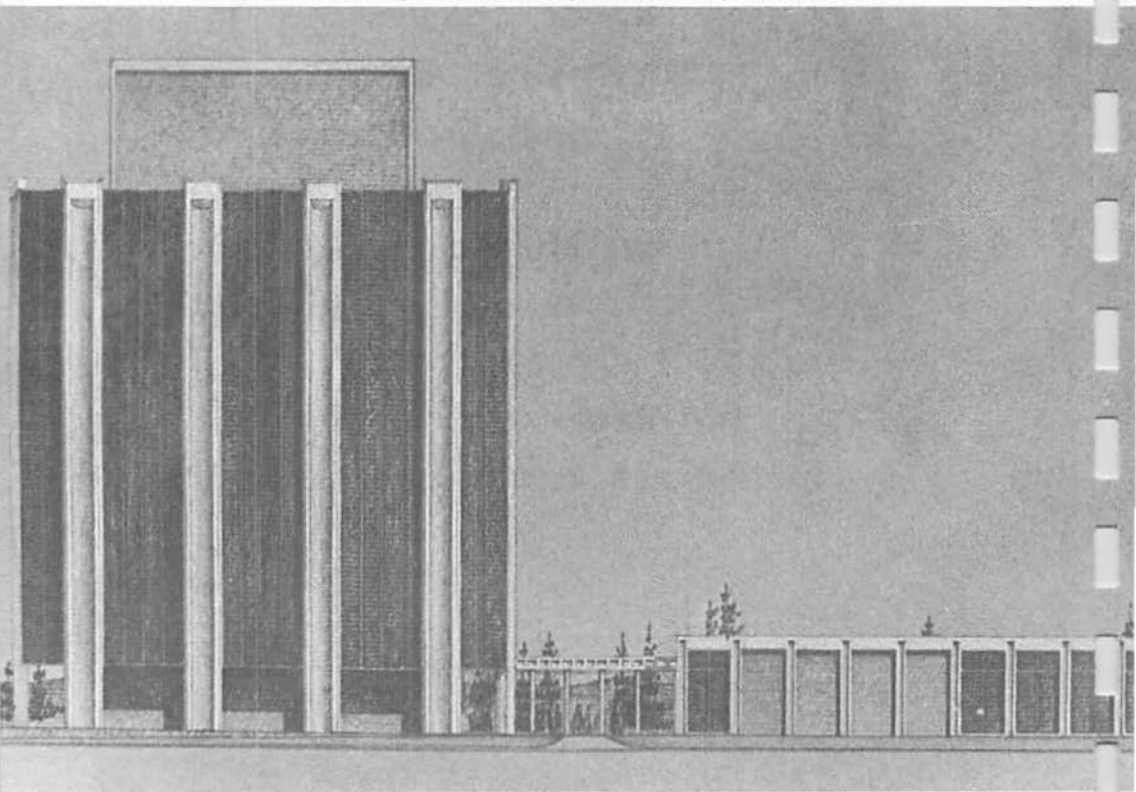
**Earth Sciences and
Mineral Industry**

**Mathematics, Physical
Sciences and Engineering**



Alaskan residents in 1966 approved a bond issue that will provide funds for a new library, humanities and fine arts center, shown in this architect's sketch.

A new building is planned for the Geophysical Institute, the oldest of the University's research institutes. Matching funds for the facility were approved by voters in 1966.



Arts and Letters

CHARLES J. KEIM—DEAN

The Humanities diversify the quest for knowledge in an era of specialization. Examining what men have thought and expressed, they keep knowledge current, expanding and general. Technique distinguishes them from subjects primarily using the empirical method of science, for there are truths which transcend verification. The study of languages breaks cultural fetters, directed reading builds appreciation, exposure to the fine arts quickens sensibility; and all, language, literature, and the arts, collaborate to make knowledge prevail and discovery imminent.

UNDERGRADUATE DEGREES—The College of Arts and Letters offers an Associate of Arts degree with majors in Liberal Arts and Vocational Art, and a Bachelor of Arts degree with majors in Art, English, French, German, Journalism, Linguistics, Music, Philosophy, Russian, Spanish, and Speech (options in Public Address, Drama, and Broadcasting). The college also offers for the Bachelor of Arts in these subjects.

GRADUATE DEGREES—The College of Arts and Letters offers a Master of Arts degree in English and Master of Fine Arts degree in Creative Writing. Students also may earn both degrees in other fields through an interdisciplinary program.

REQUIREMENTS FOR AN ASSOCIATE OF ARTS DEGREE WITH A MAJOR IN LIBERAL ARTS

I. General Education

- | | |
|---|--------------|
| A. Specific Requirements | (12) credits |
| English (Comp. and Modes of Lit.) | 6 |
| History (Hist. of U.S.) | |
| or | |
| Political Science (Amer. Govt.) | 6 |
| B. General Requirements | (18) |
| Humanities | 6 |
| Social Studies | 6 |
| Natural Science | 6 |
| Mathematics | 6 |
| Other | 6 |

II. Major in Liberal Arts

No course used to meet the General Education requirements may be used to meet the requirements of the major.

- | | |
|--|-----------------|
| A. Specific Requirements | (14-20) credits |
| One year of foreign language | 6-10 |
| or | |
| Two years of high school of one Foreign language | |
| Speech (Public Speaking) | 4 |
| Formal Humanities Course(s) | 4-6 |
| B. Approved Electives | (10-16) |
| Of which six must be in one department | |

A total of 60 credits is required for graduation.

ART DEPARTMENT

HELMUT G. VAN FLEIN—DEPARTMENT HEAD

DEGREE—BACHELOR OF ARTS

MINIMUM REQUIREMENTS FOR DEGREE—130 CREDITS

The program of the Art Department recognizes the responsibility of the Fine Arts within the Humanities. Courses in Art further encourage independent, original and creative thinking. The language of art is universal and through it man's creative and intellectual endeavors become more meaningful.

REQUIREMENTS FOR AN ASSOCIATE OF ARTS DEGREE

WITH A MAJOR IN VOCATIONAL ART

I. General Education

A. Specific Requirements	(12) credits
English	6
American Government	
or	
American History	6
B. General Requirements	(18)
Humanities	6
Social Studies	6
Natural Science	6
Mathematics	6
Other	6

II. Major

No course used to meet the General Education requirements may be used to meet the requirements of the major.

A. Specific Requirements

Art 55 and 56, Elementary Drawing, or	
Art 105 and 106, Freehand Drawing	4 credits
Art 57 and 58, Elementary Printmaking, or	
Art 207 and 208, Beginning Printmaking	4
Art 59 and 60, Elementary Metalcraft, or	
Art 209 and 210, Beginning Metalcraft	6
Art 61 and 62, Elementary Sculpture, or	
Art 211 and 212, Beginning Sculpture	6
Art 63 and 64, Elementary Oil Painting, or	
Art 213 and 214, Beginning Oil Painting	6
Art 65 and 66, Elementary History of World Arts, or	
Art 261 and 262, History of World Art	6

B. Electives

A total of 60-75 credits numbered 50-299 are required for graduation.

The Department of Art would prefer that the candidate for the Associate of Arts Degree in Vocational Art continue for at least a minimum of 4 credits, not exceeding a maximum of 6 credits in the area of his strongest interests and artistic inclinations.

REQUIREMENTS OF A B.A. DEGREE WITH AN ART MAJOR

- Complete general requirements for a B.A. degree as listed on page 28.
- Complete a minimum of 37 hours of credit in Art Courses. A maximum of 54 hours of credit in Art courses may be counted toward the degree.
- Complete the following courses in Art:

Art 105-106 — Freehand Drawing	4 credits
Art 207-208 — Beginning Printmaking	4
Art 211-212 — Beginning Sculpture	6
Art 218-214 — Beginning Oil Painting	6
Art 261-262 — History of World Art	6
Art 307 — Intermediate Printmaking	2
Art 311 — Intermediate Sculpture	3
Art 313 — Intermediate Oil Painting and	
Art 407-408 — Advanced Printmaking	4
or	
Art 411-412 — Advanced Sculpture	6
or	
Art 413-414 — Advanced Oil Painting	4

4. Transfer students who are candidates for the B.A. Degree with a major in Art must complete a minimum of 18 hours of credits in Art courses while in residence.
5. The Department of Art advises Art students to use French or German to meet their foreign language requirements.

ART PROGRAM FOR TEACHERS

Students who are preparing to teach Art must complete the requirements for an Education minor as required by the Department of Education.

ENGLISH DEPARTMENT

WILLIAM R. WOOD—ACTING DEPARTMENT HEAD

DEGREES—BACHELOR OF ARTS, MASTER OF ARTS, MASTER OF FINE ARTS
MINIMUM REQUIREMENTS FOR DEGREES: B.A.—130 CREDITS

M.A.—30 ADDITIONAL CREDITS

Writing and reading distribute ideas and make them available to all. Courses in the writing of English perfect expression, encourage creativity; the study of literature both delights and builds a regard for scholarship. Through its writing courses, its courses in language and literature, the department offers much to developing minds.

REQUIREMENTS FOR A B.A. DEGREE WITH AN ENGLISH MAJOR

1. Complete general requirements for a B.A. degree as listed on page 28.
2. Complete 33 credits in English beyond English 101 and 102, including:

English 239—Form and Technique of Poetry	3 credits
or	
English 240—Form and Technique of Fiction	3
(Not required of Junior and Senior transfer majors.)	
English 423—Elizabethan Drama	3
or	
English 424—Shakespeare	3
English 421—Chaucer	3
English 472—History of the English Language	3
- A minor in English requires 18 credits beyond English 101 and 102, including:

English 421—Chaucer	3
or	
English 472—History of the English Language	3
English 423—Elizabethan Drama	3
or	
English 424—Shakespeare	3

REQUIREMENTS FOR A M.A. DEGREE IN ENGLISH

1. A minimum of 30 credits of approved courses including English 697-698, Thesis 6 Credits.
2. Completion of the general graduate degree requirements listed on page 30.

REQUIREMENTS FOR M.F.A. DEGREE IN CREATIVE WRITING

1. Graduate creative writing courses
 2. English electives
 3. Interdisciplinary electives
 4. Thesis
- | |
|------------|
| 12 credits |
| 15 |
| 12 |
| 9 |

JOURNALISM DEPARTMENT

JIMMY B. BEDFORD—DEPARTMENT HEAD

The complex world of today demands a tremendous corps of people with diverse backgrounds to write the material which appears in the rapidly expanding media of communication. Such writers inform, interpret, entertain and guide. The students may select courses which will enable them to communicate more effectively with the written word.

REQUIREMENTS FOR A B.A. DEGREE WITH A MAJOR IN JOURNALISM

1. Complete general requirements for a B.A. degree listed on page 28.
2. Complete a minimum of 21 hours of credits in Journalism. A maximum of 30 hours of credit in Journalism courses may be counted toward a degree.
3. Complete the following courses in journalism:

Journalism 201—Introduction to Journalism	3	credits
Journalism 202—Reporting of Public Affairs	3	
Journalism 203—Basic Photography	3	
Journalism 312—Editing	3	
Journalism 324—Newspaper Production, Advertising and Typography	3	

The above courses also constitute the minor in Journalism.
4. Complete 6 hours in the following courses:

Journalism 204—Journalism Laboratory	1-3
Journalism 303—Advanced Photography	3
Journalism 320—Journalism in Perspective	3
Journalism 311—Magazine Article Writing	3
Journalism 412—Advanced Editing	3
Journalism 433—Public Relations	3
Journalism 444—Foreign Correspondence	3
Journalism 193-494—Special Topics	3-6
5. Work at least two semesters on a university or equivalent publication.

LINGUISTICS AND FOREIGN LANGUAGE DEPARTMENT**BRUCE R. GORDON—DEPARTMENT HEAD****DEGREE—BACHELOR OF ARTS****MINIMUM REQUIREMENTS FOR DEGREE — 130 CREDITS**

In a shrinking world Americans increasingly need to communicate directly with other peoples in order to achieve mutual understanding. Whether it be Eskimo or English, the language of a people embodies its unique culture and way of thinking and feeling. Therefore, to know only one language is to think in only one way.

Linguistics is the science of language. The study of linguistics and of foreign languages and literatures liberates the student from the confines of his own culture and also makes his own culture more meaningful to him.

REQUIREMENTS FOR A B.A. DEGREE WITH A FOREIGN LANGUAGE OR LINGUISTICS MAJOR OR MINOR

Majors are offered in French, German, Linguistics, Russian, and Spanish.

1. Complete general requirements for a B.A. degree as listed on page 28, including foreign language requirement.
2. Complete 26 credits beyond first year in the major language.
3. Complete 3 credits in a Linguistics course.

A minor in a foreign language requires four semesters (12 credits) of study in that language beyond the 102 level.

For a major in Linguistics:

1. Complete general requirements for a B.A. degree as listed on page 28, including foreign language requirement.
2. Complete 4 semesters (12-16 credits) in language other than that offered as fulfillment of foreign language requirements toward the B.A. degree. Both languages must be chosen from French (or Latin or Spanish), Greek, German, or Russian.
3. Complete 15 credits in Linguistics courses.

A minor in Linguistics requires 12 credits in Linguistics.

Audio-lingual practice in the Language Laboratory is an integral part of all elementary and intermediate language courses.

A Master's degree program in foreign languages is now being planned. However, when the catalog went to press details had not yet been completed.

MUSIC DEPARTMENT**CHARLES W. DAVIS—DEPARTMENT HEAD****DEGREE—BACHELOR OF ARTS****MINIMUM REQUIREMENTS FOR DEGREE — 130 CREDITS**

The curriculums are designed to satisfy two principal objectives:

Culturally, to teach musical skills, knowledges, appreciations, and attitudes that in combination with the other arts and humanities contribute to an enriched life.

Professionally, to prepare teachers and musicians who, in addition to the above, are proficient in professional leadership. In the teaching of students as public school music teachers, the necessary specialization in the fields of music and education is provided for in the curriculums leading to the B.A. degree. (To provide a more intensive specialization in the areas of music education and applied music, a program of studies leading to a Bachelor of Music degree has been proposed and is currently under study.)

The various music organizations maintained by the department offer participation experiences for students in all colleges of the University.

REQUIREMENTS FOR A B.A. DEGREE WITH A MAJOR IN MUSIC OR MUSIC EDUCATION

For a major in Music:

1. Complete general requirements for a B.A. degree listed on page 28.
2. Complete 40 credits in Music including:

Music 131-132—Basic Theory	6	credits
Music 231-232—Advanced Theory	6	
Music 321-322—History of Music	6	
Music 321-322—History of Music	6	
Music 331-332—Form and Analysis	4	
Music 491-492—Senior Seminar	2	
Applied Music, to include 8 credits of private lessons and 8 credits of ensemble participation	16	
3. Prior to graduation, satisfy an examination in piano proficiency.

For a major in Music Education:

1. Complete general requirements for a B.A. degree listed on page 28.
2. Complete 40 credits in Music including:

Music 131-132—Basic Theory	6	credits
Music 231-232—Advanced Theory	6	
Music 321-322—Music History	6	
- At least 6 credits from:

Music 315-316—Instrumental Methods	4	
Music 415-416—Instrumental Methods	4	
Applied Music, to include 6 credits of private lessons and 10 credits of ensemble participation, to include 2 semesters of a vocal ensemble	16	
3. Complete a minor in Education including either Music 343, or Music 405.
4. Prior to graduation satisfy an examination in piano proficiency.

A minor in Music requires 12 hours of music credit in addition to 6 credits in Music 131-132—Basic Theory, or Music 123-124—Introduction to Music.

MUSIC CURRICULUM**FALL SEMESTER**

FIRST YEAR	15-17 Credits
Engl. 101—Comp. & Modes of Lit.....	3
Foreign Language 101 or 201.....	3-5
History 117.....	3
P.E. or Mil. Sci.....	1 or 1½
Applied Music (Ensemble).....	1
Applied Music (Private Lesson).....	1
Music 131—Basic Theory	3

SPRING SEMESTER

	15-17 Credits
Engl. 102—Comp. & Modes of Lit.....	3
Foreign Language 101 or 202.....	3-5
History 118	3
P.E. or Mil. Sci.....	1 or 1½
Applied Music (Ensemble).....	1
Applied Music (Private Lesson).....	1
Music 132—Basic Theory	3

SECOND YEAR	16-17 Credits
English	3
Foreign Language 201 or 493	3
Lab. Science or Math.	4-5
P.E. or Mil. Sci.	1 or 1½
Applied Music (Ensemble)	1
Applied Music (Private Lesson)	1
Music 231—Advanced Theory	3

THIRD YEAR	15-16 Credits
Music 331—Form and Analysis	2
Applied Music (Ensemble)	1
Applied Music (Private Lesson)	1
Music 321—History of Music	3
Music 307—Chamber Music	1

or	
Music 313—Opera Workshop	1-2
Elective (Social Science)	3
Electives	4-5

FOURTH YEAR	14-16 Credits
Applied Music (Ensemble)	1
Applied Music (Private Lesson)	1
Music 307—Chamber Music	1
Music 317—Collegium Musicum	1

or	
Music 313—Opera Workshop	2-3
Music 491—Senior Seminar	2
Electives	8

MUSIC EDUCATION CURRICULUM

FIRST YEAR	15-17 Credits
Engl. 101—Comp. & Modes of Lit.	3
Foreign Language 101 or 201	3-5
History 117	3
P.E. or Mil. Sci.	1 or 1½
Applied Music (Ensemble)	1
Applied Music (Private Lesson)	1
Music 131—Basic Theory	3

Note: Music Education Majors who are instrumentalists must take at least two semesters of a vocal ensemble.

SECOND YEAR	15 Credits
English	3
Foreign Language 201 or 493	3
Psy. 101—Intro. to Psychology	3
P.E. or Mil. Sci.	1 or 1½
Applied Music (Ensemble)	1
Applied Music (Private Lesson)	1
Music 231—Advanced Theory	3

THIRD YEAR	17-18 Credits
Ed. 313—Educational Psych.	3
Lab. Science or Math.	4-5
Applied Music (Ensemble)	1
Applied Music (Private Lesson)	1
Music 316—Instrumental Methods	2
Music 321—History of Music	3
Elective (Social Science)	3

FOURTH YEAR	15-17 Credits
Ed. 421—Secondary School	3
*Music 405—Methods of Teaching	3
Music	3
Applied Music (Ensemble)	1
Music 307—Chamber Music	1
Music 317—Collegium Musicum	1
or	
Music 313—Opera Workshop	2-3
Electives	6

16-17 Credits	
English	3
Foreign Language 202 or 494.....	3
Lab. Science or Math.....	4-5
P.E. or Mil. Sci.	1 or 1½
Applied Music (Ensemble).....	1
Applied Music (Private Lesson).....	1
Music 232—Advanced Theory	3

15-16 Credits	
Music 332—Form and Analysis.....	2
Applied Music (Ensemble)	1
Applied Music (Private Lesson).....	1
Music 322—History of Music	3
Music 307—Chamber Music	1

or	
Music 313—Opera Workshop	1-2
Elective (Science)	3
Electives	4-5

14-16 Credits	
Applied Music (Ensemble)	1
Applied Music (Private Lesson)	1
Music 307—Chamber Music	1
Music 317—Collegium Musicum	1

or	
Music 313—Opera Workshop	2-3
Electives	10

15-17 Credits	
Engl. 102—Comp. & Modes of Lit.....	3
Foreign Language 102 or 202.....	3-5
History 118	3
P.E. or Mil. Sci.	1 or 1½
Applied Music (Ensemble)	1
Applied Music (Private Lesson)	1
Music 132—Basic Theory	3

15 Credits	
English	3
Foreign Language 202 or 494	3
Psy. 252—Psych. of Adolescence	3
P.E. or Mil. Sci.	1 or 1½
Applied Music (Ensemble)	1
Applied Music (Private Lesson)	1
Music 232—Advanced Theory	3

17-18 Credits	
Ed. 332—Tests & Measurements.....	3
Lab. Science or Math.....	4-5
Applied Music (Ensemble)	1
Applied Music (Private Lesson)	1
Music 316—Instrumental Methods	2
Music 322—History of Music	3
*Music 343—Educ. Music in the Elem. School	3

12-13 Credits	
Ed. 452—Directed Teaching	6
Applied Music (Ensemble)	1
Music 307—Chamber Music	1
Music 317—Collegium Musicum	1
or	
Music 313—Opera Workshop	2-3
Elective	3

*Although the Music Department does not require that students include both Music 343 and 405 in the curriculum, both are recommended.

PHILOSOPHY DEPARTMENT**RUDOLPH W. KREJCI—DEPARTMENT HEAD**

The courses in Philosophy are designed to confront the student with the fundamental problems of Western philosophical heritage and introduce him to independent reflection on them, thus broadening his perspective for the various areas of specialization in science, the social sciences and humanities.

REQUIREMENTS FOR A B.A. DEGREE WITH A PHILOSOPHY MAJOR OR MINOR

1. Complete general requirements for a B.A. degree as listed on page 28.
2. Complete a year sequence in mathematics.
3. Complete 30 credits in Philosophy, including:

Phil. 201—Introduction to Philosophy	3	credits
Phil. 204—Introduction to Logic	3	
Choose 2 courses out of the following:		
Phil. 321—Aesthetics	3	credits
Phil. 332—Ethics	3	
Phil. 341—Epistemology	3	
Phil. 342—Metaphysics	3	
Complete Phil. 351-353—History of Philosophy.....	6	
Complete Phil. 471—Contemporary Philosophical Problems.....	3	
Choose two of the following:		
Phil. 481—Philosophy of Science	3	
Phil. 482—Comparative Religion	3	
Phil. 484—Philosophy of History	3	
Complete one course Phil. 493 or 494—Special Topics.....	3	
4. A minor in Philosophy requires 15 credits of approved Philosophy courses.

SPEECH, DRAMA, AND RADIO DEPARTMENT**LEE H. SALISBURY—DEPARTMENT HEAD****DEGREE—BACHELOR OF ARTS****MINIMUM REQUIREMENTS FOR DEGREE — 130 CREDITS**

Few phenomena of man's life are of greater concern to him than communication. In one way or another, communication has become the common problem, *sine qua non*, of the sciences and the arts alike. The life and behavioral sciences concern themselves directly with communication, for it is in the processes of communication which define and maintain the structure and functioning of living things. The physical sciences from archaeology to space have an equal, if less direct concern, for the progress and development of any science depend upon communication. It is the business of the arts to communicate, just as it is the art of science to communicate.

The University, as the embodiment of all the fields of human endeavor has the responsibility to disseminate its accumulated and expanding knowledge to the State and to the world. The Department of Speech, Drama, and Radio, through its related disciplines is an important part of this communication process.

The Department offers elective courses leading to a major or minor in Speech with options in Public Address, Drama, and Broadcasting.

REQUIREMENTS FOR A B.A. DEGREE WITH A SPEECH MAJOR

1. Complete general requirements for a B.A. degree as listed on page 28.
2. Complete 24 credits in Speech beyond Speech 111, including:

Speech 221—Introduction to Theater	3	credits
Speech 231—Introduction to Broadcasting.....	3	
Speech 315—Phonetics	2	
Speech 316—Voice and Diction.....	2	
3. A Speech major may elect to take an option in Public Address by adding the following courses to those specifically required in 2 (above).

Speech 212—Public Speaking II.....	2
Speech 313—Argumentation and Debate	2
Speech 314—Discussion	2
Speech 317—Oral Interpretation	3

4. A Speech major may elect to take an option in Drama by adding the following courses to those specifically required in 2 (above).
- | | |
|--|---|
| Speech 223—Acting I | 3 |
| Speech 325—Theater Production | 3 |
| Speech 327—Makeup for Theater..... | 2 |
| Speech 425—Directing | |
| or | |
| Speech 323—Acting II | 3 |
| Psychology 101—Introduction to Psychology..... | 3 |
5. A speech major may elect to take an option in Broadcasting by adding the following courses to those specifically required in 2 (above).
- | | |
|--|---|
| Speech 237—Announcing | 2 |
| Speech 333—Writing for Radio and Television..... | 3 |
| Speech 334—Radio-Television Advertising | |
| or | |
| Speech 433—Radio-Television News | 3 |
| Speech 335—Broadcast Production | 3 |
6. A minor in Speech requires 12 credits of approved Speech electives.

Behavioral Sciences and Education

CHARLES K. RAY—DEAN

The College of Behavioral Sciences and Education provides students an opportunity to develop an understanding of man in relation to his social, psychological and cultural background. Such knowledge serves to broaden the student's concept of life and conditions of society and to provide a foundation for service in specific professional fields.

UNDERGRADUATE DEGREES — The College has programs that lead to Bachelor of Arts degrees in Anthropology, Geography, Psychology and Sociology. The Bachelor of Education degree is awarded to students majoring in Education. The Bachelor of Science degree is awarded to students majoring in Anthropology, Geography and Home Economics.

GRADUATE DEGREES—A program leading to the Master of Education degree is offered to qualified students.

ANTHROPOLOGY AND GEOGRAPHY DEPARTMENT

ERNA GUNTHER—DEPARTMENT HEAD

DEGREES—BACHELOR OF ARTS AND BACHELOR OF SCIENCE

MINIMUM REQUIREMENTS FOR B.S. OR B.A. DEGREES—130 CREDITS

The Department offers undergraduate level courses in Anthropology and Geography, and some opportunities for undergraduate research. A major can be obtained in both fields. Anthropology and Geography contribute to an understanding of the complex problems of human behavior; cultural and social organization and the relationship of man to the various environments. Archaeological and human ecological research carried out in the field and library provides information about past and present modes of living and of origins and distribution of peoples and cultures.

REQUIREMENTS FOR A B.A. DEGREE OR A B.S. DEGREE WITH AN ANTHROPOLOGY MAJOR

1. Complete general requirements for a B.A. or B.S. degree as listed on page 28.
2. Complete 25 credits in Anthropology exclusive of Anth. 101-102, including:

Anth. 203—World Ethnography: Europe, Asia, Africa.....	3	credits
Anth. 204—World Ethnography: New World, Pacific.....	3	
Anth. 214—Archaeology	4	
Anth. 213—Culture History	3	
Anth. 423—Social Structure	3	
Anth. 424—Religion and Magic.....	3	
Anth. 402—Physical Anthropology	4	
Anth. 498—Thesis or Project	2	
3. Complete the following:

Psy. 101—Introduction to Psychology.....	3
Philosophy 201 or Sociology 101.....	3
Geology 101-102 or Biology 105-106.....	8

A minor in Anthropology requires 12 approved hours in Anthropology exclusive of Anth. 101-102.

REQUIREMENTS FOR A B.A. DEGREE OR B.S. DEGREE WITH A GEOGRAPHY MAJOR

1. Complete general requirements for a B.A. or B.S. degree as listed on page 28.
2. Complete 20 credits in geography beyond Geography 101, including:

Geog. 201—Elements of Physical Geography.....	3	credits
Geog. 316—Pleistocene Environment	3	
Geog. 327—Cold Lands	3	
Geog. 401—Weather and Climate	3	
Geog. 402—Man and Nature	3	
Geog. 491—Seminar	3	
3. Complete the following:

Land Res. 101—Conservation of Natural Resources.....	2
Biol. 303—Principles of Ecology.....	3
Geol. 101—General Geology	4
Geol. 102—Historical Geology	4
Anth. 101—The Study of Man.....	3
Anth. 214—Archaeology	4

A minor in Geography requires 12 hours of approved Geography courses.

GRADUATE STUDY

See page 30.

EDUCATION DEPARTMENT

CHESTER E. YOUNGBLOOD—DEPARTMENT HEAD

DEGREES—BACHELOR OF EDUCATION AND MASTER OF EDUCATION

MINIMUM REQUIREMENTS FOR DEGREES: B. Ed.—130 CREDITS

M. Ed.— 30 ADDITIONAL CREDITS

The Education Department offers curricula designed to prepare personnel for teaching in elementary and secondary schools. Students are introduced to fundamental problems of education in the contemporary world through courses designed to develop perspective and understanding of the relations of education to society. Courses provide information and practice in the development of instructional materials and the understanding of methods of instruction. Students are formally admitted to the program of teacher education on the basis of multiple criteria of their ability to make a positive contribution to the educational profession.

CERTIFICATION—Students may qualify for teaching certificates in various states only by planning their programs to meet specific requirements. Certificates are issued by the appropriate state department of education. In Alaska, certificates are granted by the Alaska Department of Education in Juneau. Students who obtain the B. Ed. degree will meet the current academic requirements for Alaskan certification. Any student minoring in Education must meet the Alaska certification requirements. Students seeking a minor in Education should consult with the Head of the Education Department during their freshman year to obtain specific requirements.

ADMISSION TO TEACHER EDUCATION—Any student wishing to prepare for teaching through the University of Alaska must formally apply for admission to teacher education. Students should consult with the Head of the Education Department at the beginning of their sophomore year to secure procedure for formal application for admission to the Teacher Education Program. Enrollment in education courses in no way implies admission to the Program of Teacher Education.

REQUIREMENTS FOR THE B. ED. DEGREE WITH AN ELEMENTARY EDUCATION MAJOR

1. Military Science or Physical Education (2 years)..... 6-4 credits
2. Humanities (Art, English, Languages, Linguistics, Music, Philosophy, Speech)
- a. Required Courses:

English 101 and 102—Composition & Modes of Literature.....	6
--	---
- b. Recommended Courses:

English 213—Advanced Exposition	3
Music 243—Education, Music for the Classroom Teacher.....	3
Philosophy 201—Introduction to Philosophy.....	3
Speech 111—Public Speaking I or Speech 316—Voice and Diction....	2

3. Social Sciences (Anthropology, Economics, Geography, History, Home Economics 236, Political Science, Psychology, Sociology)..... 24
- a. Required Courses:
- History 117-118—Formation of European Civilization & Development of Modern Europe or History 131-132—History of the U.S..... 6
 - Political Science 101-102—American Government and Introduction to Political Science 6
 - Psychology 101—Introduction to Psychology..... 3
 - Psychology 305—Child Development 5
- b. Recommended Courses:
- Economics 121-122—Principles of Economics..... 6
 - Anth. 101—The Study of Man..... 3
 - Anth. 427—Contemporary Problems 3
 - Geography 101—Introductory Geography 3
 - History 341—History of Alaska 3
 - Sociology 101-102—Introduction to Sociology..... 6
4. Mathematics 7
- The two following courses:
- Math 121—Introduction to Modern Algebra and Analysis..... 4
 - Math 205—Mathematics for Teachers..... 3
5. Natural Sciences (Anthropology 402, Biological Sciences, Chemistry, Geography 201 & 401, Geology, Physics)..... 6
6. Education (students must maintain a 2.00 average in all education courses) 30
- a. Required Courses:
- Ed. 313—Educational Psychology 3
 - Ed. 332—Test and Measurements..... 3
 - Ed. 409—The Teaching of Reading..... 3
 - *Ed. 452—Student Teaching 6
- *Candidates who have taught successfully three years in the public elementary schools may petition to be excused from Ed. 452.
- b. Nine credits from the following courses:
- Ed. 301—Social Studies for Elementary Teachers..... 3
 - Ed. 302—Language Arts for Elementary Teachers..... 3
 - Ed. 304—Literature for Children..... 3
 - Ed. 306—Teaching of Science in Elementary Schools..... 3
 - Ed. 307—Teaching of Arithmetic 2
 - Ed. 311—Audio Visual Methods and Materials..... 3
 - Ed. 323—Small Schools 2
- c. Six credits from the following courses:
- Ed. 345—Sociology of Education..... 3
 - Ed. 348—History of Education in the U.S..... 3
 - Ed. 422—Philosophy of Education..... 3
 - Ed. 426—Principles and Practices of Guidance..... 3
 - Ed. 446—Public School Organization, Control & Support..... 3
7. A total of 36 credits (including 12 upper division credits) in any two of the following fields, with a minimum of 12 credits in either field:
- | | |
|---------------------|-------------------|
| Anthropology | Linguistics |
| Art | Mathematics |
| Biological Sciences | Music |
| Chemistry | Philosophy |
| Economics | Physics |
| English | Political Science |
| French | Psychology |
| Geography | Russian |
| Geology | Spanish |
| German | Speech |
| History | Sociology |

Credits earned in fulfillment of (2) (3), (4), and (5) above may be applied toward courses listed in (7) above.

8. Forty-eight credits of upper division courses, twenty-four of which must be completed at the University of Alaska.
9. Sufficient free electives to total 130 credits.

**REQUIREMENTS FOR THE B. ED. DEGREE WITH A SECONDARY
EDUCATION MAJOR**

1. Military Science or Physical Education (2 years).....6-4 credits
2. Humanities (Art, English, Languages, Linguistics, Music, Philosophy, Speech) 20
 - a. Required Courses:
 - English 101 and 102—Composition & Modes of Literature..... 6
 - b. Recommended Courses:
 - English 213—Advanced Exposition 3
 - Philosophy 201—Introduction to Philosophy..... 3
 - Speech 111—Public Speaking I or Speech 316—Voice and Diction..... 2
3. Social Sciences (Anthropology, Economics, Geography, History, Home Economics 236, Political Science, Psychology, Sociology)..... 24
 - a. Required Courses:
 - History 117-118—Formation of European Civilization and Development of Modern Europe OR History 131-132—History of the U.S..... 6
 - Political Science 101-102—American Government and Introduction to Political Science 6
 - Psychology 101—Introduction to Psychology 3
 - Psychology 252—Psychology of Adolescence 3
 - b. Recommended Courses:
 - Anth. 101—The Study of Man..... 3
 - Anth. 427—Contemporary Problems..... 3
 - Economics 121 and 122—Principles of Economics..... 6
 - History 341—History of Alaska..... 3
 - Sociology 101 and 102—Introduction to Sociology..... 6
4. Mathematics and Natural Sciences (Anthropology 402, Biological Sciences, Chemistry, Geography 201 & 401, Geology, Physics)..... 8
5. Education (students must maintain at least a 2.00 average in all education courses) 24
 - a. Required Courses:
 - Ed. 313—Educational Psychology 3
 - Ed. 332—Tests and Measurements 3
 - Ed. 402 or 405 or 406 or 407 or 408—Methods..... 3
 - *Ed. 452—Student Teaching 6

*Candidates who have taught successfully three years in the public secondary schools may petition to be excused from Ed. 452.
 - b. Six credits from the following courses:
 - Ed. 345—Sociology of Education..... 3
 - Ed. 348—History of Education in the U.S. 3
 - Ed. 421—Secondary Education 3
 - Ed. 422—Philosophy of Education 3
 - Ed. 446—Public School Organization, Control and Support..... 3
 - c. Three credits of education electives selected from the following:
 - Ed. 311—Audio Visual Methods and Materials..... 3
 - Ed. 323—Small Schools 2
 - Ed. 426—Principles and Practices of Guidance..... 3
6. Teaching Majors and Minors (students must maintain at least a 2.00 average in their teaching majors).
 - Option A.

Complete a teaching major of 24 to 36 approved credits and a teaching minor of 12 to 24 approved credits for a total of 48 credits of which at least 18 must be upper division. See advisor.
 - Option B.

Complete an integrated teaching major-minor of 48 approved credits. See advisor.

MAJOR OR MINOR (Option A)

- Art
- Biological Sciences
- Business Education
- Chemistry
- English
- **Foreign Language
- History
- Home Economics
- Mathematics
- Music
- ***Physical Education
- Physics
- Speech

MINOR ONLY (Option A)

- ****Economics
- *Geography
- Journalism
- *Political Science
- *Sociology

INTEGRATED MAJOR-MINOR**(Option B)**

- General Science
- Social Science
- Earth Sciences

*Approved for History Major only.

**Confer with Head of the Department of Education.

***See page 80 for requirements for B. Ed. Degree with a major in Physical Education.

****Approved for History and Business Education Teaching Majors only.

Credit earned in fulfillment of (2), (3), and (4) above may be applied toward the teaching major and teaching minor. The student is responsible for obtaining and keeping current his copy of the courses required for his teaching major and minor. Any deviations from the specified courses must be approved by written petition to the Head of the Education Department.

7. Forty-eight credits of upper division courses, twenty-four of which must be completed at the University of Alaska.

8. Sufficient free electives to total 130 credits.

SECONDARY TEACHING CERTIFICATES FOR MAJORS IN OTHER DEPARTMENTS

All majors in other departments who wish to obtain an Alaskan secondary teaching certificate should confer with the Head of the Education Department in their freshman year to obtain course requirements and application procedure for admission to teacher education. It is essential that the student have the necessary prerequisites and admission to teacher education for placement in student teaching in the public schools. The following courses should be taken at the indicated times:

FALL SEMESTER

- | | |
|-----------|----------|
| Sophomore | Psy. 101 |
| Junior | *Ed. 313 |
| Senior | *Ed. 421 |

SPRING SEMESTER

- | |
|-----------|
| *Psy. 252 |
| *Ed. 332 |
| *Ed. 452 |

*Ed. 402, 405, 406, 407 or 408

*Students must maintain a 2.00 average in these courses.

REQUIREMENTS FOR ADMISSION TO STUDENT TEACHING

1. Elementary School—Kindergarten through Eighth Grade:

- a. Prior and current full acceptance to Teacher Education
- b. A formal application on file with the Director of Student Teaching by November 1 for student teaching in the following spring semester and by March 15 for student teaching in the following fall semester.

- c. A completed physical examination.
 - d. Completion of 100 credits leading to a bachelor's degree with a minimum G.P.A. of 2.00.
 - e. Completion of Psy. 101, Psy. 305, Math. 121, Math. 205, Ed. 313, Ed. 332, Ed. 409, and two other elementary methods and materials courses.
 - f. A minimum G.P.A. of 2.00 in all required psychology and all education courses attempted, including a minimum G.P.A. of 2.00 in all elementary methods and materials courses attempted.
 - g. Approval of Committee on Admission to Teacher Education to enter student teaching.
2. Secondary Schools—Seventh Grade through Twelfth Grade:
- a. Prior and current full acceptance to Teacher Education.
 - b. A formal application on file with the Director of Student Teaching by November 1 for student teaching in the following spring semester and by March 15 for student teaching in the following fall semester.
 - c. A completed physical examination.
 - d. Completion of 100 credits leading to a bachelor's degree with a minimum G.P.A. of 2.00.
 - e. Completion of a minimum of 24 approved credits in an approved teaching major with a G.P.A. of 2.00 or more.
 - f. Completion of Psy. 101, Psy. 252, Ed. 313, and Ed. 332 with a minimum G.P.A. of 2.00 in Psy. 252, Ed. 313, and Ed. 332.
 - g. A minimum G.P.A. of 2.00 in all education courses attempted.
 - h. Approval of Committee on Admission to Teacher Education to enter student teaching.

REQUIREMENTS FOR A M.ED. DEGREE IN EDUCATION

A person must make application for admission to graduate study and submit acceptable scores on a graduate entrance examination before he will be considered for admission to the M.Ed. program.

The M.Ed. program offers several options from which a person selects an area of specialization. Inquiries concerning the options available and the specific requirements of each option should be directed to the Head of the Department of Education. In addition, the Head of the Department of Education should be contacted concerning the procedure to be followed in applying for admission to graduate study and taking the graduate entrance examination.

In general the requirements for the M.Ed. Degree are as follows:

1. A satisfactory score on a graduate entrance examination.
2. Completion of *minimum* of 30 credits of approved courses including Ed. 627, Educational Research.
3. One year of satisfactory teaching experience or administrative experience or reasonable equivalency.
4. The equivalent of an undergraduate major in Education.
5. Passing a comprehensive examination.
6. Completion of the general graduate degree requirements listed on page 30.

HEALTH, PHYSICAL EDUCATION AND RECREATION DEPARTMENT

FRANCIS F. PYNE—DEPARTMENT HEAD

The professional curriculum in physical education is designed to prepare qualified students to teach physical education, to coach athletic teams, and to direct recreational programs according to the needs of the State of Alaska. The curriculum provides for either a major or a minor in physical education to be coupled with the requirements of the Department of Education's teacher education program.

REQUIREMENTS FOR A B. ED. DEGREE WITH A PHYSICAL EDUCATION MAJOR

1. Complete the general requirements for a B.Ed. degree as follows:
 - a. Military Science: 6 credits

- b. Physical Education:
 Women majoring in P.E. will complete P.E. 101 and P.E. 102.
 Men majoring in P.E. are exempt from required Physical Education (P.E. 105, 106, 205, 206).
- c. Humanities: 14 credits
 Art 261 or Music 123; English 101, 102; Philosophy 201; Speech 111.
- d. Social Sciences: 18 credits
 Anthropology 342 or Anthropology 427; Economics 121; History 341; Psychology 101, 252; Sociology 101.
- e. Mathematics, Natural Science, Physical Science: 16 credits
 Biology 105; Chemistry 104; Mathematics 121.
- f. Education: 18 credits
 Education 313, 332, 406, 426, 452.

2. Complete the following required professional courses:

P.E. 311—Principles of Physical Education	4	credits
P.E. 142—Personal and Community Health	3	
P.E. 146—First Aid	2	
P.E. 308—Physical Education for the Elementary School	3	
P.E. 331—Sports Officiating	2	
P.E. 358—History of Physical Education	3	
P.E. 425—Organization and Administration of Physical Education	3	
P.E. 440—Prevention and Care of Athletic Injuries	2	
P.E. 103—Fundamentals of Sports—Tennis and Badminton	1	
P.E. 211—Fundamentals of Sports—Volleyball and Soccer	1	
P.E. 212—Fundamentals of Sports—Recreational Activities	1	
P.E. 213—Fundamentals of Sports—Swimming	1	
P.E. 214—Fundamentals of Sports—Skiing	1	
P.E. 215—Fundamentals of Sports—Tumbling & Gymnastics (men) ..	1	
P.E. 216—Fundamentals of Sports—Rhythms	1	
P.E. 217—Fundamentals of Sports—Tumbling and Apparatus Gymnastics (women)	1	
P.E. 301—Techniques in Physical Education—Basketball (men)	2	
P.E. 302—Techniques in Physical Education—Track & Field	2	
P.E. 303—Techniques in Physical Education—Team Sports (women)	2	
P.E. 400—Techniques in Physical Education—Tumbling & Gymnastics	2	
P.E. 401—Techniques in Physical Education—Aquatics & Rhythms	2	

3. Teaching minor (will depend upon minor chosen).

4. Electives to total 130 credits.

Completion of the following courses is required for a MINOR in Physical Education.

P.E. 311—Principles of Physical Education	4	credits
P.E. 146—First Aid	2	
P.E. 308—Physical Education for the Elementary School	3	
P.E. 425—Organization and Administration of Physical Education	3	
P.E. 440—Prevention & Care of Athletic Injuries—Required for MEN only	2	
P.E. 103—Fundamentals of Sports—Tennis and Badminton	1	
P.E. 211—Fundamentals of Sports—Volleyball and Soccer	1	
P.E. 214—Fundamentals of Sports—Skiing	1	
P.E. 215—Fundamentals of Sports—Tumbling & Gymnastics (men) ..	1	
P.E. 216—Fundamentals of Sports—Rhythms	1	
P.E. 217—Fundamentals of Sports—Tumbling and Apparatus Gymnastics (women)	1	
P.E. 301—Techniques in Physical Education—Basketball (men)	2	
P.E. 302—Techniques in Physical Education—Track & Field	2	
P.E. 303—Techniques in Physical Education—Team Sports (women)	2	

HOME ECONOMICS DEPARTMENT

LUCILE TROST DOMIGAN—DEPARTMENT HEAD

DEGREE—BACHELOR OF SCIENCE

MINIMUM REQUIREMENTS FOR DEGREE—130 CREDITS

This curriculum strives to provide for preparation in professional careers in Home Economics and to offer students a sound background in nutrition, textiles, child development, foods and clothing as well as experience in the liberal arts.

HOME ECONOMICS CURRICULUM

FALL SEMESTER

FIRST YEAR 16 Credits

Engl. 101—Comp. & Modes of Lit.	3
H.E. 102—Meal Management	3
H.E. 121—Related Art	2
Chem. 101—Gen. Chemistry	4
P.E. 101—Freshman Phys. Ed. (Women)	1
Electives	3

SECOND YEAR 16 Credits

Psy. 101—Intro. to Psy.	3
P.E. 201—Sophomore Phys. Ed. (Women)	1
H.E. 211—Textiles	3
English Elective	3
Biol. 105—Fund. of Biol.	4
Electives	2

THIRD YEAR 16 Credits

Econ. 121—Prin. of Econ.	3
H.E. 312—Adv. Clothing	3
Electives	10

FOURTH YEAR 17 Credits

H.E. 441—Family Health	2
H.E. 445—Home Mgt.	3
Electives	12

SPRING SEMESTER

15 Credits

Engl. 102—Comp. & Modes of Lit.	3
H.E. 241—Home Mgt. Res.	3
H.E. 113—Cloth. Const. & Sel.	3
H.E. 122—Related Art	2
P.E. 102—Freshman Phys. Ed. (Women)	1
Soc. 101—Intro. to Soc.	3

16 Credits

H.E. 236—Marriage & Fam. Life	3
P.E. 202—Sophomore Phys. Ed. (Women)	1
H.E. 302—Advanced Foods	3
English Elective	3
Speech 111—Public Speaking	2
Electives	4

17 Credits

H.E. 304—Nutrition	3
H.E. 305—Child Develop.	5
Electives	9

17 Credits

H.E. 446—House Plan. & Furn.	3
Electives	14

Science Requirements—A minimum of 12 credits in Natural or Physical Sciences is required.

All electives must be approved by the Head of the Department. Approximately sixty credit hours must be liberal, including natural and social sciences and the humanities.

TEACHING CERTIFICATES—Home Economics graduates may qualify for teaching Vocational Home Economics. They may obtain an Alaskan teaching certificate by completing Education 407, Methods of Teaching Home Economics, and meeting the other requirements of the State Department of Education.

A minor in Home Economics requires a minimum of 12 approved credits in Home Economics.

MILITARY SCIENCE DEPARTMENT

LIEUTENANT COLONEL JOHN B. DeMARCUS—DEPARTMENT HEAD

The mission of the Reserve Officers Training Corps is to produce junior officers who by their education, training, and inherent qualities are suitable for continued development as officers in the United States Army; to give students such basic military training as will be of benefit to themselves and to the military service; and to assist in qualifying students for positions of leadership in industries and professional careers.

The program of instruction prescribed by the Department of the Army for Senior Division R.O.T.C. is divided into the Basic Course for freshmen and sophomores, and the Advanced Course for juniors and seniors.

BASIC COURSE—Required. All regularly enrolled, physically fit male students, without previous military training, who are citizens of the United States and are between the ages of 14 and 23 years, are required to satisfactorily complete the Basic Course R.O.T.C.

ADVANCED COURSE—Elective. Those students who successfully complete the Basic Course may apply for enrollment in the Advanced Course. Candidates must be physically qualified, recommended by the PMS and approved by the University President. Veterans may be allowed credit for prior active Federal Service in lieu of the Basic Course for the purpose of admission into the Advanced Course.

A contract, signed by the students who enroll in the Advanced R.O.T.C. courses, makes satisfactory completion of these courses a prerequisite for graduation.

FLIGHT TRAINING—Department of the Army sponsors an Army Flight Training program for senior R.O.T.C. cadets at the University of Alaska. This training program consists of 73 hours of instruction at a civilian flying school in the Fairbanks area. Successful completion of the course qualifies the student for a private pilot's license. Prerequisites: Completion of the Junior year of R.O.T.C. and approval of the PMS and Academic Vice-President. Applicants must also pass the Army Flight Training physical examination and aptitude test.

Necessary texts, flying clothes, cost of lessons and transportation are furnished by the Department of the Army.

UNIFORMS AND EQUIPMENT—Members of the Basic and Advanced Course are furnished uniforms and texts by the United States Army.

Regulation gymnasium shoes, available through the University Book Store, are required to be worn during Leadership Laboratory (drill). These shoes must be purchased by the individual student.

ALLOWANCE—Advanced Course students receive a subsistence payment that amounts to approximately \$1,000.00 for the two year period.

ACADEMIC MINOR—Eighteen credits in Military Science may be accepted by an academic advisor as fulfilling the graduation requirements for a minor.

AWARDS—Awards are made annually for outstanding achievement in R.O.T.C. band, drill team, rifle team, ski team; for best individual, squad, and platoon in drill; to the outstanding cadet in each class.

R.O.T.C. RIFLE TEAM—The R.O.T.C. rifle team competes in shoulder matches with both civilian and military teams in the state. Each year the team fires in Inter-collegiate Match in competition with west coast schools. Postal matches are fired against university and college teams throughout the United States. The finest target rifles, shooting coats and gloves, targets, and ammunition are available to all R.O.T.C. cadets at no cost. Varsity letters are awarded.

R.O.T.C. BAND AND DRILL TEAM—The R.O.T.C. band and drill team participate in the Annual Winter Carnival in Fairbanks, at formations of the R.O.T.C. Cadet Corps, and at functions on campus.

TRANSFER STUDENTS—Transfer students with less than sophomore standing are required to enroll in Military Science.

DEFERMENT FROM DRAFT—Students, upon successful completion of the first semester Basic Course, and continued enrollment in R.O.T.C., may be deferred from induction under the provisions of the Universal Military Training and Service Act.

PSYCHOLOGY AND SOCIOLOGY DEPARTMENT

FRANK Q. SESSIONS—DEPARTMENT HEAD

DEGREE—BACHELOR OF ARTS

MINIMUM REQUIREMENTS FOR DEGREE—130 CREDITS

Psychology seeks to guide the student in an understanding of himself and of others in the area of experience and reaction to the milieu.

The field of Psychology has relevance for students preparing for careers in law, medicine, social work, education, industrial relations, and government service.

Psychology majors are specifically prepared for graduate work in major universities throughout the United States.

Sociology is a field in social science concerned with the behavior of people in groups, particularly societies, culture, and institutional arrangements under which people live. It is concerned with contemporary civilization.

REQUIREMENTS FOR A B.A. DEGREE WITH A PSYCHOLOGY MAJOR

1. Complete general requirements for a B.A. degree as listed on page 28.
2. Complete 24 credits in psychology beyond Psy. 101, 102, including:

Psy. 205—Statistics for Behavioral Sciences	3 credits
Psy. 213, 214—Experimental Psychology	6
Psy. 304—Abnormal Psychology or	
Psy. 209—Social Psychology	3
Psy. 491—Seminar in Human Behavior	2
3. A minor in Psychology requires 12 approved credits in Psychology beyond Psy. 101 and 102.

REQUIREMENTS FOR A B.A. DEGREE WITH A SOCIOLOGY MAJOR

1. Complete general requirements for a B.A. degree as listed on page 28.
2. Complete 24 credits in Sociology beyond Sociology 101, 102, eighteen units of which must be upper division and must include:

Soc. 434—Social Science Research Methods	3 credits
Soc. 491—Seminar in Human Behavior	2
3. Complete nine units chosen from the following:

Psy. 209—Social Psychology	3
Soc. 304—Culture and Personality	3
Soc. 410—Social Theory	3
Soc. 209—Urban Sociology	3
Soc. 232—Family and Society	3
Soc. 205—Group Processes in Modern Society	3
4. Complete the following:

Anth. 101—The Study of Man	3
----------------------------------	---

A minor in Sociology requires 12 elective credits in Sociology beyond Soc. 101 and 102.

Biological Sciences and Renewable Resources

BRINA KESSEL—DEAN

Biology is an area of science in which many disciplines come to bear; in fact, biology is in large part the summation of these various disciplines. A thorough knowledge of biology, in both its pure and applied phases, is fundamental to the welfare of mankind. With these axioms in mind, the programs in the College of Biological Sciences and Renewable Resources are designed to give students an introduction to the humanities and social sciences, a background in mathematics and the physical sciences, a firm foundation in basic biological sciences, and advanced training in specialized fields. For more details, students should read descriptive materials in the departmental sections below — Biological Sciences Department, Land Resources and Agricultural Science Department, and Wildlife Management Department.

UNDERGRADUATE DEGREES—Bachelor of Arts in Biological Sciences; Bachelor of Science in Biological Sciences, Fisheries Biology, Medical Technology, Wildlife Management.

GRADUATE DEGREES—Master of Science in Botany, Biology, Fisheries Biology, Wildlife Management, Zoology.

LAND RESOURCES AND AGRICULTURAL SCIENCE DEPARTMENT

ARTHUR S. BUSWELL—DEPARTMENT HEAD

The curriculum for the first two years is designed to provide the basic science foundation on which advanced courses are based. The curriculum is intended for students who expect to prepare for careers in wildland utilization (watershed management, forest resources, range management, recreation and conservation, etc.) and in agriculture.

Opportunities for summer employment are available through various State and Federal Agencies and through the University's Agricultural Experiment Station.

CURRICULUM

FALL SEMESTER

FIRST YEAR 16 or 16½ Credits

Engl. 101—Comp. & Modes of Lit.....	3
Biol. 105—Fund. of Biology	4
Mathematics	4
Chem. 101—General Chem.	4
P.E. or Mil. Sci.	1 or 1½

SECOND YEAR 17 or 17½ Credits

Phys. 103—Coll. Physics	4
Geol. 101—Gen. Geology	4
Econ. 121—Princ. of Econ.	3
Engl. 213—Adv. Comp.	3
Elective	2
P.E. or Mil. Sci.	1 or 1½

SPRING SEMESTER

16 or 16½ Credits

Engl. 102—Comp. & Modes of Lit.	3
Biol. 106—Fund. of Biology	4
Mathematics	4
Chem. 102—General Chem.	4
P.E. or Mil. Sci.	1 or 1½

16 or 17½ Credits

Phys. 104—Coll. Physics	4
Approved Biology Elective	4 or 3
Engl. Elective	3
Soc. Sci. Elective	3
Elective	2
P.E. or Mil. Sci.	1 or 1½

A new men's dormitory (left) opened in September of 1966. It houses 322 students. At right is Skarland Hall, a women's dormitory completed in 1964.



BIOLOGICAL SCIENCES DEPARTMENT**JAMES E. MORROW—DEPARTMENT HEAD****DEGREES—BACHELOR OF ARTS, BACHELOR OF SCIENCE,
MASTER OF SCIENCE****MINIMUM REQUIREMENTS FOR DEGREES: B.A.—130 CREDITS****B.S.— 130 CREDITS****M.S.— 30 ADDITIONAL CREDITS**

The curricula in the Biological Sciences Department are designed to give the student a broad education as well as a sound foundation in the basic principles of biology. Students pursuing either a B.A. or a B.S. degree may have majors in biological sciences. A major in medical technology is also available for B.S. degree candidates. The B.A. degree requirements include fewer credits in the major field, but give greater emphasis in the fields of social sciences and humanities and allow a greater breadth of subject matter in the curricula. The requirements for the B.S. degree include a foundation in the basic sciences as well as a stronger major within the Biological Sciences Department. Candidates who expect to teach in public secondary schools must be sure that Education requirements are met. All electives in the various curricula must be approved by the Head of the Department of Biological Sciences.

REQUIREMENTS FOR A B.A. DEGREE WITH A MAJOR IN BIOLOGICAL SCIENCES

1. Complete general requirements for a B.A. degree as listed on page 28.

2. Complete the following courses:

Biology 105-106

Mathematics—1 year

Chemistry—1 year

Biology 302—Genetics

Biology 303—Ecology

Physiology

At least two of the following:

Biology 305—Invertebrate Zoology

Biology 317—Comp. and Dev. Anat.

Biology 318—Comp. and Dev. Anat.

At least two of the following:

Biology 233—Morph. of Nonvascular Plants

Biology 234—Morph. and Anat. of Vasc. Plants

Biology 331—Systematic Botany

Biology 341—Microbiology

3. Attend Biol. 491-492 (Seminar) during Junior and Senior years.
A minor in Biological Sciences requires 14 credits of biology.**REQUIREMENTS AND CURRICULUM FOR A B.S. DEGREE WITH
MAJOR IN BIOLOGICAL SCIENCES**

1. Complete the general requirements for a B.S. degree as listed on page 29.

2. Complete the following courses:

Biology 105-106

†Mathematics—1 year

Chemistry 101-102

Organic Chemistry—1 semester

Physics—1 year

- *Foreign Language or Introductory Linguistics—1 year
- Biology 302—Genetics
- Biology 303—Ecology
- **Physiology

At least three of the following:

- Biology 305—Invertebrate Zoology
- Biology 317—Comp. and Dev. Anat.
- Biology 318—Comp. and Dev. Anat.
- Biology 413 or 414—Cell or Comparative Physiology

At least three of the following:†

- Biology 233—Morph. of Nonvascular Plants
- Biology 234—Morph. and Anat. of Vasc. Plants
- Biology 331—Systematic Botany
- Biology 341—Microbiology
- Biology 416—Plant Physiology

3. Attend Biol. 491-492 (Seminar) during Junior and Senior years.

* Linguistics allowed only when students have had at least the equivalent of two years of high school foreign language. Students having three or four years of a language in high school may with advisor's approval fulfill this requirement in the humanities area.

** May be satisfied by taking Biology 413, 414, or 416 as one of the choices below.

†Acceptable mathematics sequences include Math. 121-122; Math. 107-108-109; Math. 106-200.

‡Students preparing to enter professional schools (medical, dental, veterinary, etc.) may substitute approved chemistry courses.

REQUIREMENTS AND CURRICULUM FOR A B.S. DEGREE WITH A MAJOR IN MEDICAL TECHNOLOGY

To receive a Bachelor of Science Degree in Medical Technology, a student must have six semesters of collegiate training at an accredited college or university, three of which must be at the University of Alaska with a G.P.A. of at least 2.0, and he must fulfill all requirements of the University for the Bachelor of Science degree, plus the basic requirements as set forth by the Registry of Medical Technologists. The student then becomes a candidate to enter an affiliated school of Medical Technology, and, if accepted, registers for Biol. 401 at the University of Alaska and spends a 12-month internship at the affiliated school. The University is affiliated with three ASCP-approved, non-denominational schools of medical technology — St. Luke's Hospital School of Medical Technology, Spokane, Washington; Tacoma General Hospital School of Medical Technology, Tacoma, Washington; and The Swedish Hospital School of Medical Technology, Seattle, Washington. Upon the satisfactory completion of Biol. 401 and the other above-mentioned University requirements, the student is eligible to receive a Bachelor of Science degree from the University of Alaska. He also is eligible to take the registry examination as a Medical Technologist under standards set by the Board of Registry of the American Society of Clinical Pathologists. Upon registration, the graduate is privileged to add the initials M.T. (ASCP) after his name.

FALL SEMESTER

FIRST YEAR 15 or 15½ Credits

Engl. 101—Comp. & Mode of Lit.	3
Mathematics	3
Chem. 101—General Chem.	4
Biol. 105—Fund. of Biology	4
P.E. or Mil. Sci.	1 or 1½

SECOND YEAR 16 or 16½ Credits

Biol. 317—Comp. & Dev. Anat.	5
Engl. 213—Adv. Exposition	3
Soc. Sci. Elective	3
*Approved Chem. Elective	4
P.E. or Mil. Sci.	1 or 1½

SPRING SEMESTER

15 or 15½ Credits

Engl. 102—Comp. & Modes of Lit.	3
Mathematics	3
Chem. 102—General Chem.	4
Biol. 106—Fund. of Biology	4
P.E. or Mil. Sci.	1 or 1½

16 or 16½ Credits

Biol. 318—Comp. & Dev. Anat.	5
Chem. 212—Quant. Anal.	4
Biol. 302—Genetics	3
Soc. Sci. Elective	3
P.E. or Mil. Sci.	1 or 1½

THIRD YEAR**16 Credits**

Phys. 103—Coll. Physics	4
Biol. 341—Gen. Microbiology	4
**Foreign Language 101.....	5
Biol. 491—Seminar	0
Engl. Elective	3

17 Credits

Phys. 104—Coll. Physics	4
Biol. 342—Gen. Microbiology	4
Biol. 414—Comp. Physiology	4
Biol. 492—Seminar	0
**Foreign Language 102.....	5

FOURTH YEAR**33 or 35 Credits**

Soc. Sci. Elective	3
Elective	0-2
Biol. 401—Medical Technology	30

* Chem. 223—Intro. Organic Chem. recommended.

** Students with two years of an approved foreign language in high school may have this requirement waived.

**PREPARATORY CURRICULA—MEDICINE, DENTISTRY, NURSING
VETERINARY MEDICINE**

Students planning to become medical doctors, dentists, nurses, or veterinarians may enroll in the Biological Sciences Department. Most of the professional schools in these fields require one to three or four years of collegiate work before a student will be admitted. These years of preliminary academic work are offered by the Biological Sciences Department, where the student will follow a sequence of courses planned to meet the requirements of the particular professional field in which he is interested.

Most premedical students plan on four preliminary years. Usually these students follow a curriculum leading to a Bachelor of Arts degree with a major in Biological Science and/or Chemistry or a curriculum leading to a Bachelor of Science degree with a major in Biological Sciences or Chemistry, earning a bachelor's degree at the end of four years. Adjustments may be made to meet varying requirements. Pre-medical students who are accepted in medical school prior to finishing their bachelor's requirements and who have earned at least 100 hours of pre-professional work with a G.P.A. of 3.0 or better, may, upon the completion of certain course requirements, and upon the satisfactory completion of a year of medical school, petition to receive a bachelor's degree from the University of Alaska.

Pre-nursing students register as non-majors in the College of Biological Sciences and Renewable Resources. Course work is selected to meet the specific needs of individual students. In general, high school students interested in nursing should apply directly to an institution offering a full curriculum in nursing; those wishing to attend the University of Alaska should plan to transfer to an institution with a nursing program after one year.

STUDENTS FROM OTHER DEPARTMENTS

Students who wish a minor in the Department of Biological Sciences must have courses approved in advanced by the Head of the Department of Biological Sciences. A minor will normally have requirements similar to those listed on page 28 for the B.A. degree.

Candidates for the Bachelor of Science degree in General Science wishing a major in Biological Sciences must satisfy both the requirements of their major curriculum and those listed for B.A. degree major on page 28.

REQUIREMENTS FOR A M.S. DEGREE WITH A BOTANY, BIOLOGY OR ZOOLOGY MAJOR

1. A minimum of 30 credits of approved courses, including Biol. 697-698, Thesis.
2. An examination attesting a reading knowledge of French, German, or Russian.
3. Completion of the general requirements for a graduate degree as listed on page 30.

WILDLIFE MANAGEMENT DEPARTMENT**FREDERICK C. DEAN—DEPARTMENT HEAD****DEGREES—BACHELOR OF SCIENCE AND MASTER OF SCIENCE****MINIMUM REQUIREMENTS FOR DEGREES: B.S.— 135 CREDITS****M.S.— 30 ADDITIONAL CREDITS**

Both the wildlife management and fisheries biology curricula in the undergraduate program in the Department of Wildlife Management are intended to provide a broad basic education and training. Holders of the bachelor's degree will be qualified to

enter the management, law enforcement, and public information-education phases of wildlife work. Students contemplating careers in research, administration, advanced management work or teaching will find the bachelor's curricula solid foundations for graduate study. A program for teachers interested in conservation education is also available.

The geographic location of the University is particularly advantageous for the study of wildlife management. Spruce forest, aspen-birch forest, alpine tundra, bogs, and several types of aquatic habitats are within easy reach. Studies can be made in many other habitats ranging from the dense forests of Southeastern Alaska to the Arctic Coast.

Adequate study collections of plants and animals are available, and a 2,000-acre study area is near the campus. Undergraduates have ample opportunity for close association with the personnel of the Alaska Cooperative Wildlife Research Unit and the several local offices of the federal and state conservation agencies. These agencies usually hire a number of students for summer field work. Thus, an unusually good opportunity is available for students to gain experience and to make job connections.

Wildlife plays an extremely important part in the economy and recreation of Alaskans. Because of this, some courses in the department will be of interest to non-major students.

REQUIREMENTS AND CURRICULUM FOR A B.S. DEGREE WITH MAJORS IN WILDLIFE MANAGEMENT AND FISHERIES BIOLOGY

FALL SEMESTER

FIRST YEAR 16 or 16½ Credits

Biol. 105—Fund. of Biology.....	4
Chem. 101—General Chem.....	4
Engl. 101—Comp. & Modes of Lit.....	3
Math. 121—Intro. Algebra & Anal.....	4
P.E. or Mil. Sci.....	1 or 1½

SECOND YEAR 16 or 16½ Credits

Land. Res. 101—Cons. Natural Res....	2
Biol. 317—Comp. & Dev. Anatomy.....	5
Phys. 103—College Physics.....	4
Chem. 223—Intro. Organic Chem. (Fisheries Major)	
or	
Geol. 101—Gen. Geology	4
(Wildlife Major)	
P.E. or Mil. Sci.....	1 or 1½

MAJOR IN FISHERIES BIOLOGY

THIRD YEAR 12 + Credits*

Biol. 326—Ichthyology	3
Econ. 121—Prin. of Economics.....	3
†Foreign Language 201.....	3
W.M. 324—Scientific Sampling.....	3

FOURTH YEAR 11 + Credits

Biol. 305—Invertebrate Zoology.....	4
W.M. 304—Wildlife Mgmt. Princ.....	3
W.M. 423—Limnology	
or	
Geol. 411—General Oceanography.....	3
W.M. 491—Seminar	
or	
W.M. 493—Special Topics	1

SPRING SEMESTER

16 or 16½ Credits

Biol. 106—Fund. of Biology	4
Chem. 102—General Chem.....	4
Engl. 102—Comp. & Modes of Lit.....	3
Math. 122—Intro. Algebra & Anal.....	4
P.E. or Mil. Sci.....	1 or 1½

16 or 16½ Credits

Engl. 213—Adv. Comp.	3
Biol. 318—Comp. & Dev. Anatomy.....	5
Phys. 104—College Physics.....	4
Math. 204—Elem. Statistics	3
P.E. or Mil. Sci.....	1 or 1½

9 + Credits*

Biol. 302—Genetics	3
Biol. 303—Ecology	3
†Foreign Language 202.....	3

13 + Credits

Biol. 414—Comp. Physiology	4
Engl. 314—Research Writing.....	3
W.M. 410—Wildlife Techq.	3
W.M. 424—Ecology of Fishes.....	3

MAJOR IN WILDLIFE MANAGEMENT

THIRD YEAR		15 + Credits**		12 + Credits**
Biol. 323—Mammalogy	3		Biol. 303—Ecology	3
Biol. 331—Systematic Botany			Biol. 324—Ornithology	3
or			C.E. 116—Mapping	3
Land Res. 311—Soils	4 or 3		†Foreign Language 202.....	3
Econ. 121—Prin. of Econ.....	3			
†Foreign Language 201.....	3			
W.M. 325—Scientific Sampling.....	3			
FOURTH YEAR		12 + Credits**		14 + Credits**
Biol. 326—Ichthyology	3		Biol. 414—Comp. Physiol.	4
Biol. 331—Systematic Botany			Engl. 314—Research Writing.....	3
or			W.M. 410—Wildlife Techq.	3
Land Res. 311—Soils	4 or 3		W.M. 424—Ecology of Fishes.....	3
W.M. 304—Wildlife Mgmt. Princ.....	3		W.M. 492—Seminar	
W.M. 423—Limnology			or	
or			W.M. 494—Special Topics	1
Geol. 411—General Oceanography	3			

*In Fisheries Biology major, 24 credits of electives must be completed; 3 of these must be in Biol. 233 or Biol. 331 or Biol. 416; 6 more must be from courses which will satisfy the University's social science requirement.

**In Wildlife Management major, 15 credits of electives must be completed; 6 of these must be from the courses which will satisfy the University's social science requirement.

†A proficiency equivalent to two college years of French, German, or Russian is required for graduation. Students with two to four years of one of these languages in high school may enter the third or fourth semester of the language or have the requirement waived, whichever is appropriate. Students entering this department are expected to have two high school years of one of these languages; students lacking this preparation must take 10 credits of first year language in college, thereby reducing their college electives.

All electives must be approved by the Head Department of Wildlife Management.

A minimum of two months must be spent in the employ of an approved conservation agency before a student will be eligible for a bachelor's degree. Two typewritten copies of a report on the work done and the experience gained during this time must be approved by the Head of the Department.

Demonstration of proficiency in swimming is required for graduation.

REQUIREMENTS FOR A M.S. DEGREE WITH A MAJOR IN WILDLIFE MANAGEMENT OR FISHERIES BIOLOGY

1. A minimum of 30 credits of approved courses, including Wildlife Management 697-698, Thesis, in the field of Fisheries Biology or Wildlife Management.
2. For Fisheries Biology, an examination attesting a reading knowledge of French, German, or Russian.
3. Complete general requirements for a graduate degree as listed on page 30.

GRADUATE STUDY IN WILDLIFE MANAGEMENT

The Department of Wildlife Management and the Alaska Cooperative Wildlife Research Unit cooperate in offering graduate work leading to the Master of Science degree. Thesis work can be done in either Fisheries Biology or Wildlife Management. Persons desiring detailed information on the graduate program in Wildlife Management may obtain this from the Head, Department of Wildlife Management. The procedure to be followed in applying for admission to graduate study is outlined in the section on Admission to Graduate Study in this catalog.

The Alaska Cooperative Wildlife Research Unit offers a limited number of research assistantships; information on these and the Unit's program can be obtained from the Leader, Alaska Cooperative Wildlife Research Unit, University of Alaska, College, Alaska. Applications for these assistantships should be sent to the Unit Leader; such applications are supplementary to the application for admission for graduate study.



Studies of the aurora borealis are a key part of the research program of the Geophysical Institute. Here, a scientist adjusts a rocket assembly used in conducting upper atmosphere aurora studies.

Duckering Building, facing Memorial Plaza, houses the Institute of Marine Science, the College of Mathematics, Physical Science and Engineering and the University Computer Center.



Business, Economics and Government

LEO M. LOLL, JR.—DEAN

The primary objective of the College is to provide courses of study which will prepare young men and women for careers of responsibility in private and public organizations and which will acquaint them with the kind of society in which they will live and work when they leave the University.

Specifically, the aims of the College are: (1) To educate students for positions in industry, government and other organizations which require analytical ability; (2) to provide those who wish to prepare themselves for positions of responsibility in industry and government with a basic understanding of the economic, political and social environment; (3) to offer courses in the fields of business, economics, history and political science which meet the needs of students who wish to major in any of these disciplines with the intention of preparing themselves for advanced study or entering the teaching profession; (4) to acquaint the students with the problems of economic, political and social development in Alaska and in the Northern region of which it is a part; and (5) to instruct students in social science research techniques.

UNDERGRADUATE DEGREES—The College grants the following undergraduate degrees: Bachelor of Business Administration, Associate in Business Administration, and Bachelor of Arts.

GRADUATE DEGREE—A program leading to the Master of Business Administration Degree is offered to qualified students.

ACCOUNTING DEPARTMENT

HORACE W. DOMIGAN—DEPARTMENT HEAD

DEGREE—BACHELOR OF BUSINESS ADMINISTRATION

WITH A MAJOR IN ACCOUNTING

MINIMUM REQUIREMENTS FOR DEGREE: 130 CREDITS

The Accounting Department offers an extensive program for those interested in the fields of general accounting, auditing, cost accounting and taxation. The objective of the program is to provide a strong business background through understanding of accounting and to train students for employment in accounting work.

REQUIREMENTS FOR A B.B.A. DEGREE WITH A MAJOR IN ACCOUNTING

1. Complete requirements for a B.B.A. Degree listed on page 29.
2. Complete the following required courses:

Acc 215-216—Principles of Accounting	6	credits
Acc 315—Intermediate Accounting	3	
Acc 316—Analysis of Financial Statements.....	3	
Acc 413—Federal and State Tax Accounting.....	3	
Acc 416—Advanced Accounting	3	
Acc 417—Cost Accounting	3	
Acc 418—Auditing	3	
B.A. 331-332—Business Law	6	
Approved upper division electives	8-10	

GRADUATE STUDY

See page 30.

BUSINESS ADMINISTRATION DEPARTMENT**ROBERT C. HARING—DEPARTMENT HEAD****DEGREES—BACHELOR OF BUSINESS ADMINISTRATION****MASTER OF BUSINESS ADMINISTRATION:****MINIMUM REQUIREMENTS FOR DEGREES: B.B.A.— 130 CREDITS****M.B.A.— 30 ADDITIONAL CREDITS**

The Business Administration Department offers professional training in the fields of management, finance, and marketing to those individuals interested in entering industry or government upon graduation. The objective of the program is to prepare men and women to meet the complex problems of the political, economic and social environment and to enable them to give efficient service to industry and government on the basis of their academic training.

REQUIREMENTS FOR A BACHELOR OF BUSINESS ADMINISTRATION DEGREE

1. Complete general requirements for a B.B.A. degree listed on page 29.
2. Complete the following foundation courses:

Acc. 215-216—Principles of Accounting	6	credits
B.A. 331-332—Business Law	6	
B.A. 323—Corporate Organization and Finance	3	
B.A. 343—Marketing	3	
B.A. 360—Production Management	3	
B.A. 462—Administrative Policy	3	
3. A student must take a minimum of 12 hours of the courses listed below including all of the courses in one of the three groups.

Management

B.A. 359—Regulation of Industry	3	credits
B.A. 361—Industrial Relations	3	
B.A. 424—Managerial Economics	3	
B.A. 480—Organization Theory	3	

Marketing

B.A. 359—Regulation of Industry.....	3
B.A. 442—Marketing Institutions and Channels.....	3
B.A. 443—Marketing Theory and Analysis of Market Change.....	3

Finance

B.A. 422—Corporate Financial Problems	3
B.A. 423—Investment Management	3
Acc 316—Analysis of Financial Statements.....	3
Econ 351—Public Finance and Taxation.....	3

A minor in Business Administration requires 15 credits of Business Administration electives.

REQUIREMENTS FOR THE MASTER OF BUSINESS ADMINISTRATION DEGREE

1. Completion of the general requirements for a graduate degree listed on page 30.
2. Completion of a minimum of 30 semester hours of required courses in Business Administration and Economics (including thesis) as approved by the candidate's graduate committee.
3. Completion of a thesis which generally will carry no more than six semester hours of credit. Under unusual conditions, and upon petition, additional thesis hours may be granted. Thesis credit applies toward the 30 required hours.
4. A minimum terminal grade point average of 3.00.
5. A minimum grade for a comprehensive written examination given during the last semester of course work to test achievement and knowledge in the general area of business.
6. Passage of an oral examination, after the thesis has been approved, covering the student's field of specialization and thesis content.

ECONOMICS DEPARTMENT**GENE L. ERION—DEPARTMENT HEAD****DEGREE—BACHELOR OF ARTS****MINIMUM REQUIREMENTS FOR DEGREE—130 CREDITS**

Economics is the study of those social activities of man which are concerned with the production, distribution, and consumption of goods and services. In today's complex world, nearly all social phenomena and problems have economic aspects. Organized knowledge of the functioning of our economy and of its relations with other economic systems is therefore essential to an understanding of the world in which we live.

The Department considers its goal of teaching to be three-fold: (1) To provide students with basic tools of analysis; and factual, statistical and descriptive materials which will assist them in discharging their duties as citizens; (2) to introduce students majoring in this department to the various fields of economics in order to prepare them for positions in business, government and graduate study; (3) to offer a course of study suitable for a minor in economics.

REQUIREMENTS FOR A B.A. DEGREE WITH AN ECONOMICS MAJOR

1. Complete general requirements for a B.A. degree listed on page 28.

2. Complete the following foundation courses:

Econ 121-122—Principles of Economics.....	6	credits
History 131-132—History of the U.S.....	6	
Math through statistics	6-12	
P.S. 101—American Government	3	
P.S. 102—Introduction to Political Science.....	3	
Behavioral Sciences	6	
Econ 232—Economic History of the United States.....	3	
Econ 321—Price and Allocation Theory	3	
Econ 324—Income and Employment.....	3	

A student must take a total of 18 hours of the courses listed below including all of the courses in one of the four groups.

Business Economics

B.A. 359—Regulation of Industry	3	credits
B.A. 422—Corporate Financial Problems	3	
B.A. 424—Managerial Economics	3	

Monetary and Fiscal Economics

Econ 350—Financial and Monetary Theory and Policy.....	3	
Econ 351—Public Finance and Taxation.....	3	
Econ 429—Business Fluctuations	3	

Development and International Economics

Econ 337—Economic Development	3	
Econ 423—Comparative Economics	3	
Econ 435—Economics of Resources.....	3	
Econ 463—International Economics	3	

Labor and Industrial Relations

B.A. 361—Industrial Relations	3	
Econ 420—Labor Economics	3	
B.A. 480—Organization Theory	3	

A minor in Economics requires 15 credits of approved Economics electives.

GRADUATE STUDY

See page 30.

HISTORY DEPARTMENT**HERMAN E. SLOTNICK—DEPARTMENT HEAD****DEGREE—BACHELOR OF ARTS****MINIMUM REQUIREMENTS FOR DEGREE—130 CREDITS**

The History Department seeks to make the student aware of the cultural heritage of mankind, the great problems that man has faced throughout history and how he has sought to solve them.

Through the study of history, a student may prepare himself for a career in teaching, in the public service, or for advanced work in history and the other social sciences.

REQUIREMENTS FOR A B.A. DEGREE WITH A HISTORY MAJOR

1. Complete general requirements for a B.A. Degree listed on page 28.
2. Complete the following foundation courses:

Econ. 121—Principles of Economics.....	3	credits
Hist 117—Formation of European Civilization.....	3	
Hist 118—Development of Modern Europe.....	3	
Hist 131-132—History of the U.S.	6	
P.S. 101—American Government	3	
P.S. 102—Introduction to Political Science.....	3	
3. Complete 20 credits in History, including:

Hist 475—Introduction to Historical Method.....	3
Approved Upper Division American History Electives.....	6
Approved Upper Division European History Electives.....	6

A minor in History requires 12 credits of History electives, 6 of which must be upper division.

GRADUATE STUDY

See page 30.

OFFICE ADMINISTRATION DEPARTMENT**MELBA F. PELOSI—DEPARTMENT HEAD****DEGREES—BACHELOR OF ARTS WITH A MAJOR IN OFFICE ADMINISTRATION OR BUSINESS EDUCATION****ASSOCIATE IN BUSINESS ADMINISTRATION DEGREE WITH A MAJOR IN OFFICE ADMINISTRATION****CERTIFICATE IN SECRETARIAL SERVICE****MINIMUM REQUIREMENTS FOR DEGREES: CERTIFICATE— 30 CREDITS****A.B.A.— 60 CREDITS****B.A. — 130 CREDITS**

The Department offers four courses of study in order to meet the different needs of those who plan to specialize in the field of office operations: (1) An extensive four-year program leading to the degree of Bachelor of Arts with a major in office administration. The objective of the curriculum is to provide the students with the knowledge, skills and abilities required of the efficient office administrator or executive secretary. (2) A four-year course leading to the degree of Bachelor of Arts with a major in Business Education. The objective of the curriculum is to prepare young men and women for the teaching of business subjects in the secondary schools. (3) An intensive two-year program in office administration leading to an Associate in Business Administration Degree with a major in Office Administration. (4) A one year certificate issued after completion of 30 credits with emphasis placed on typewriting, dictaphone, filing and the English Language.

REQUIREMENTS FOR A B.A. DEGREE WITH A MAJOR IN OFFICE ADMINISTRATION OR BUSINESS EDUCATION

1. Complete requirements for the B.A. Degree listed on page 28.
2. Complete the following required courses:

Acc 215-216—Principles of Accounting	6	credits
O.A. 101-102—Shorthand or approved electives.....	6	
O.A. 105—Intermediate Typewriting	2	
O.A. 106—Advanced Typewriting	2	
O.A. 201—Intermediate Stenography	3	
O.A. 202—Advanced Stenography	3	
O.A. 203—Office Machines	3	
O.A. 231—Business Correspondence	3	
O.A. 302—Secretarial Training	3	
3. Social Science must include:

Econ. 121-122—Principles of Economics.....	6
B.A. 331—Business Law	3
4. Approved Upper Division Electives..... 8
5. The following minor in education is required for Business Education Majors.

Psy 101—General Psychology	3
Psy 252—Psychology of Adolescence	3
Ed 313—Educational Psychology	3
Ed 332—Tests and Measurements	3
Ed 408—Methods of Teaching Business Education Subjects.....	3
Ed 421—Secondary Education	3
Ed 452—Directed Teaching	6

REQUIREMENTS FOR AN A.B.A. DEGREE WITH A MAJOR IN OFFICE ADMINISTRATION

1. Complete the general requirements for an Associate Degree listed on page 30.
2. Complete the following required courses in Office Administration:

O.A. 101-102—Shorthand (or approved electives).....	6	credits
O.A. 105—Intermediate Typewriting	2	
O.A. 106—Advanced Typewriting	2	
O.A. 201—Intermediate Stenography	3	
O.A. 202—Advanced Stenography	3	
O.A. 203—Office Machines	3	
O.A. 208—Specialized Secretarial Skills	3	
O.A. 231—Business Correspondence	3	
Approved Electives	5	
Total	60	

REQUIREMENTS FOR A ONE-YEAR CERTIFICATE IN SECRETARIAL SERVICE

- | 1st Semester | |
|--|------------|
| Engl 67—Elementary Exposition | 3 credits |
| Speech 68—Public Speaking I..... | 2 |
| O.A. 105—Intermediate Typewriting | 2 |
| O.A. 61—Clerical Skills | 3 |
| O.A. 65—Dictaphone Transcription | |
| or | |
| O.A. 101—Shorthand | 3 |
| O.A. 63—Adding and Calculating Machines..... | 3 |
| | 16 credits |
| 2nd Semester | |
| Engl 68—Elementary Exposition | 3 credits |
| O.A. 106—Advanced Typewriting | 2 |
| O.A. 66—Dictaphone Transcription or | |
| O.A. 102—Shorthand | 3 |
| O.A. 99—Office Practice | 6 |
| | 14 credits |

POLITICAL SCIENCE DEPARTMENT**RONALD E. CHINN—DEPARTMENT HEAD****DEGREE—BACHELOR OF ARTS****MINIMUM REQUIREMENTS FOR DEGREE—130 CREDITS**

The study of political science is the study of man's efforts to create social organizations and processes compatible with his environment. Political science is intimately related to all of the social science disciplines. It is the study of the dynamics of human behavior in the various cultural, national, and international spheres.

The student of political science may prepare for teaching or for advanced study in law and social science, or prepare himself for a career in public service.

REQUIREMENTS FOR A B.A. DEGREE WITH A POLITICAL SCIENCE MAJOR

1. Complete the general requirements for a B.A. Degree listed on page 28.

English	12	credits
Foreign Language	12-16	
Social Science:		
Hist. 117-118	6	
Econ. 121-122	6	
Phil. 201	3	
Mathematics and Natural Science:		
Math. 121-122	8	
Laboratory course in physics or chemistry.....	8	
Physical Education or Military Science.....	4-6	

2. Complete the following required courses.

Psy. 205—(or equivalent) Statistics for Behavioral Scientists.....	3
P.S. 101—American Government	3
P.S. 102—Introduction to Political Science.....	3
P.S. 201—Comparative Politics: The Political Process.....	3
P.S. 202—Comparative Politics: Case Studies.....	3
P.S. 321—International Affairs	3
P.S. 322—International Law and Organization.....	3
P.S. 401-402—Political Behavior	6
P.S. 411-412—Political Theory	6

3. Complete two approved minors.

Complete elective courses to bring total credits to 130.

GRADUATE STUDY

See page 30.



Art Department offers instruction in sculpturing, painting, ceramics and allied arts.

Native student works on a piece of silver jewelry. A new program to teach Eskimo ivory carvers up-to-date techniques in their craft was begun in 1966-67 by the university's Division of Statewide Services.



Earth Sciences and Mineral Industry

EARL H. BEISTLINE—DEAN

The objectives of the College of Earth Sciences and Mineral Industry are: to prepare students for their place in the profession, community, state, nation and world; to carry on research and development work that will add to basic knowledge as well as assist in the discovery, recovery and utilization of mineral resources, and to provide more generalized instruction to students on campus and to interested persons in various communities in Alaska.

UNDERGRADUATE DEGREES—The College has programs that lead to Bachelor of Science Degrees in Geology, Geological Engineering, and Mining Engineering. A Bachelor of Arts Degree with a major in Geology may be earned.

GRADUATE DEGREES—Programs leading to a Master of Science Degree are offered in Geology, Mineral Industry Management, and Mineral Preparation Engineering.

The professional degree Mining Engineer (E.M.) may be earned by engineering graduates of the College.

The Geology Department offers the Ph. D. degree; and interdisciplinary research and study programs leading to the doctorate are available through cooperative arrangements between the Department and the Geophysical and Marine Science Institutes.

MINERAL INDUSTRY RESEARCH LABORATORY—The 1963 Alaska State Legislature authorized the establishment of a mineral industry research program at the University of Alaska. The purpose of the Laboratory is to conduct appropriate applied and basic research in various areas of the mineral industry that will aid in the further utilization of Alaska's mineral resources. Research is conducted in facilities of the College and coordinated with graduate student academic programs.

EARTH SCIENCES AND MINERAL INDUSTRY AGENCY—Housed in the Brooks Memorial Mines Building with the College of Earth Sciences and Mineral Industry is the College Office of the Alaskan Geology Branch of the U.S. Geological Survey. This arrangement, leading to close association and cooperation and sharing of some facilities, tends to give harmony and efficiency to the work of all for the benefit of the mineral industries of Alaska.

GEOLOGY DEPARTMENT

ROBERT B. FORBES—DEPARTMENT HEAD

DEGREES—BACHELOR OF ARTS, BACHELOR OF SCIENCE,
MASTER OF SCIENCE AND Ph.D.

MINIMUM REQUIREMENTS FOR DEGREES—

B.A. GEOLOGY MAJOR—130 CREDITS

B.S. GEOLOGY—130 CREDITS, PLUS 8 CREDIT SUMMER FIELD COURSE

M.S. GEOLOGY—30 ADDITIONAL CREDITS, INCLUDING THESIS

B.S. GEOLOGICAL ENGINEERING—135 CREDITS PLUS 8 CREDIT SUMMER FIELD COURSE

Ph.D. (OPEN)

The bachelors degree curricula in geology provides broad training in the earth sciences and essential course work in mathematics and the physical sciences. The geological engineering curriculum is designed to prepare the student for professional work in the earth sciences, involving engineering problems. Graduate programs are tailored to the special research and study interests of the student.

REQUIREMENTS AND CURRICULUM FOR A B.S. DEGREE IN GEOLOGY**FALL SEMESTER****FIRST YEAR 17 or 17½ Credits**

Engl. 101—Comp. & Modes of Lit.....	3
Math. 106—Algebra & Trig.....	5
Geol. 101—General Geology	4
Chem. 101—General Chemistry.....	4
P.E. or Mil. Sci.....	1 or 1½

SECOND YEAR 16 or 16½ Credits

Geol. 213—Mineralogy	5
Math. 201—Calculus	4
Phys. 211—General Physics.....	4
E. S. 101—Graphics	2
P.E. or Mil. Sci.....	1 or 1½

THIRD YEAR 17 Credits

Geology Elective	4
Geol. 321—Sedimentation	3
Geol. 401—Invert. Paleontology	4
English Elective	3
Social Science Elective	3

SUMMER

Geol. 351—Field Geol., 8 credits, 8 weeks

FOURTH YEAR 15 Credits

Foreign Language	5
Geol. 400—Earth Sci. Jour. Cl.....	0
Approved Electives	7
Social Science Elective	3

One year of a modern foreign language is required for graduation. Students who have completed two years of formal instruction in a modern foreign language at the high school level may petition to fulfill this requirement by taking a first year college reading examination in the language concern.

Geol. 400—Earth Sciences Journal Club is required of all upper division geology and graduate students every semester.

SPRING SEMESTER**16 or 16½ Credits**

Engl. 102—Comp. & Modes of Lit.....	3
Math. 200—Calculus	4
Geol. 102—Historical Geology	4
Chem. 102—General Chemistry	4
P.E. or Mil. Sci.....	1 or 1½

17 or 17½ Credits

Geol. 214 — Petrology.....	5
Math. 202—Calculus	4
Phys. 212—General Physics.....	4
E.S. 102—Graphics	2
Min. 102A—Min. Systems Engr.....	1
P.E. or Mil. Sci.....	1 or 1½

16 Credits

Geology Elective	4
Geol. 304—Geomorphology	3
Geol. 314—Structural Geol.	3
Geol. 402—Stratigraphy	3
Social Science Elective.....	3

15 Credits

Foreign Language	5
Geol. 400—Earth Sci. Jour. Cl.....	0
Approved Electives.....	7
English Elective	3

REQUIREMENTS AND CURRICULUM FOR A B.S. DEGREE IN GEOLOGICAL ENGINEERING**FALL SEMESTER****FIRST YEAR 18 or 18½ Credits**

Engl. 101—Comp. & Modes of Lit.	3
Math. 106—Algebra & Trig.....	5
Chem. 101—General Chemistry	4
E.S. 101—Graphics	2
E.S. 111—Engr. Science	3
P.E. or Mil. Sci.	1 or 1½

SECOND YEAR 16 or 16½ Credits

Math. 201—Calculus	4
Geol. 101—General Geology	4
Phys. 211—Gen. Physics	4
E.S. 207—Measurements	3
P.E. or Mil. Sci.	1 or 1½

THIRD YEAR 18 Credits

Econ. 121—Prin. of Economics	3
E.S. 331—Mech. of Materials	3
English Elective	3
Geol. 213—Mineralogy	5
Chem. 331—Physical Chem.	4

SPRING SEMESTER**17 or 17½ Credits**

Engl. 102—Comp. & Modes of Lit.	3
Math. 200—Calculus	4
Chem. 102—General Chemistry	4
E.S. 102—Graphics	2
E.S. 112—Engr. Science	3
P.E. or Mil. Sci.	1 or 1½

17 or 17½ Credits

Math. 202—Calculus	4
Geol. 102—Historical	4
Phys. 212—Gen. Physics	4
E.S. 208—Mechanics	4
P.E. or Mil. Sci.	1 or 1½

16 Credits

Chem. 212—Quantitative Anal.	4
Geol. 214—Petrology	5
Geol. 314—Structural Geol.	3
Min. 102—Mineral Sys. Eng.	4

SUMMER

Geol. 351—Field Geology, 8 credits, 8 weeks.

FOURTH YEAR**18 Credits****14 Credits**

Geol. 401—Invertebrate Paleo.	4	Engl. Elective	3
Min. Pr. 313—Mineral Prep.	3	Geol. 406—Ore Deposits	3
Geol. 415—Geol. and Engr. Prob. of Frozen Ground	3	Social Science Electives	6
Geol. 400—Earth Sci. Jour. Club	0	Electives	1
Geol. 321—Sedimentation	3	Geol. 400—Earth Sci. Jour. Club.....	0
E.S. 341—Fluid Mechanics	4		

Geol. 400—Earth Science Journal Club is required of all upper division Geological Engineering majors.

REQUIREMENTS FOR A B.A. DEGREE WITH A GEOLOGY MAJOR

1. Complete the general requirements for a B.A. Degree listed on page 28.
2. Complete required courses in Geology as planned in individual conference with the Head of the Geology Department.

A minor in Geology requires 12-16 credits of approved Geology courses.

REQUIREMENTS FOR A M.S. DEGREE IN GEOLOGY

1. A minimum of 30 credits, including a maximum of 12 credits in Geol. 693-694, Special Topics, and Geol. 697-698, Thesis.
2. An examination to demonstrate ability to read scientific literature in an approved foreign language.
3. Completion of the general requirements for a graduate degree listed on page 30.

REQUIREMENTS FOR A Ph.D.

1. Program arranged by conference.
2. Completion of the general requirements for the Ph.D. listed on page 32.

MINERAL ENGINEERING DEPARTMENT

DONALD J. COOK—DEPARTMENT HEAD

DEGREES—BACHELOR OF SCIENCE, ENGINEER OF MINES,
AND MASTER OF SCIENCE

MINIMUM REQUIREMENTS FOR DEGREE: B.S.—140 CREDITS

M.S.—30 ADDITIONAL CREDITS

In the Mining Engineering curriculum, particular emphasis is placed upon engineering as it applies to the development and exploration of mineral resources and upon the economics of the business of mining. In addition, a student interested in Petroleum Engineering may complete the first two years of the Mining Engineering curriculum and then transfer to another university and complete the final two years of the curriculum without loss of time.

UNDERGRADUATE DEGREES—The Department of Mineral Engineering offers the Bachelor of Science Degree in Mining Engineering.

GRADUATE DEGREES—The graduate program allows for the awarding of Master of Science Degrees in Mineral Industry Management and Mineral Preparation Engineering. The curriculum consist of core courses in Engineering Management with electives in the field of Mineral Industries and advanced courses in Mineral Preparation, respectively. University policy pertaining to graduate study leading to a Master's Degree applies.

The graduate program also provides for the awarding of a professional degree, Mining Engineer (E.M.). This degree may be conferred upon engineering graduates who present satisfactory evidence of continuous engagement in responsible engineering work for not less than five years and a satisfactory thesis.

REQUIREMENTS AND CURRICULUM FOR A B.S. DEGREE IN MINING ENGINEERING

FALL SEMESTER

FIRST YEAR	18 or 18½ Credits
Engl. 101—Comp. & Modes of Lit.	3
Math. 106—Algebra & Trig.	5
E.S. 101—Graphics	2
E.S. 111—Engineering Science	3
Geol. 101—General Geology	4
P.E. or Mil. Sci.	1 or 1½

*Course may be taken in increments, see course descriptions.

SECOND YEAR	17 or 17½ Credits
Math. 201—The Calculus	4
Phys. 211—General Physics	4
Geol. 213—Mineralogy	4
Chem. 201—Gen. & Quant. Chem.	4
P.E. or Mil. Sci.	1 or 1½

THIRD YEAR	18 Credits
Chem. 331—Phys. Chem.	4
Engl. Elective (Lit. recomm.)	3
E.S. 331—Mechanics of Materials	3
E.S. 341—Fluid Mechanics	4
Min. 303—Min. Plant Engr.	4

FOURTH YEAR	18 Credits
Min. 405—Geophys. and Geochem.	3
*B.A. 360—Production Mngt.	3
E.E. 313—Elem. Elec. Engr.	3
Math. Elective	3
Min. Pr. 313—Intro. to Min. Prep.	3
Social Science Elective.	3

*Approved electives may be substituted.

The above program may be taken over a five-year period if a chemistry sequence of Chem. 101, 102, and 212 is followed and the student desires more time for electives of his choice.

PETROLEUM ENGINEERING—Because of recent developments in the petroleum industry in Alaska, the Board of Regents has approved the initiation of a two-year basic program in Petroleum Engineering at the University of Alaska. Students enrolling in Petroleum Engineering will normally complete the first two years of basic engineering study listed in the mining engineering curriculum. This course of study may be altered to allow for requirements of individuals. Upon satisfactory completion of the two-year curriculum, students may transfer to one of a number of universities having petroleum engineering programs and complete their course of study without loss of time or course credit.

REQUIREMENTS FOR A M.S. DEGREE IN MINERAL INDUSTRY MANAGEMENT

Completion of the program listed below:

FALL SEMESTER	15 Credits	SPRING SEMESTER	15 Credits
E.M. 611—Engr. Management	3	E.M. 612—Engr. Management	3
E.M. 605—Adv. Engr. Economy	3	E.M. 613—Engr. Management	3
Min. 697—Thesis	3	Min. 698—Thesis	3
Approved Elective	3	Approved Elective	6
Min. 621 Adv. Mineral Economics	3		

Completion of the general requirements for a graduate degree as listed on page 30.

**REQUIREMENTS FOR A M.S. DEGREE IN MINERAL PREPARATION
ENGINEERING**

Completion of the program listed below:

FALL SEMESTER	15 Credits	SPRING SEMESTER	15 Credits
Min. Pr. 601—Froth Flotation	3	Min. Pr. 696—Min. Pre. Res.....	3
Min. Pr. 695—Min. Prep. Res	3	Min. Pr. 606—Plant Design	3
Min. 621—Adv. Mineral Economy	3	*Elective	6
*Elective	3	Min. Pr. 698—Thesis	3
Min. Pr. 697—Thesis	3		

Completion of the general requirements for a graduate degree as listed on page 30.

*Electives will be in the field of chemistry, physics and mathematics and will be chosen to broaden the candidate's fundamental knowledge, depending upon his specific background and interest.



Spirited participation in class discussion is a hallmark of the University's teaching program.

Swimming is a popular recreational activity on campus. An intercollegiate-size pool is kept at a constant mid-80 degree temperature throughout the year.



Mathematics, Physical Sciences and Engineering

CHARLES SARGENT—DEAN

Physical Science is based upon mathematical fundamentals, Engineering is founded upon mathematical and physical principles. The integration of the departments of this College provides the common ground for training in science and technology.

The primary mission of the College is to provide education to the baccalaureate level in its departments and to supplement the primary purpose with reasearch and graduate training where necessary.

UNDERGRADUATE DEGREES—The College grants the following undergraduate degrees: Bachelor of Arts, Bachelor of Science.

GRADUATE DEGREES—The College offers the following graduate degrees: Master of Arts, Master of Science, Master of (Civil, Chemical, Electrical, Mechanical) Engineering, and Doctor of Philosophy.

DEPARTMENTS—Departments in the College include: Chemistry and Chemical Engineering, Civil Engineering, Electrical Engineering, Engineering Management, Mathematics, Mechanical Engineering, and Physics.

ENGINEERING SCIENCE COURSES—The designation Engineering Science is given to courses which are common to all fields of Engineering. Each engineering curriculum specifies which of these courses are required and the semester in which it is advisable to take them.

FIRST-YEAR ENGINEERING STUDENTS—All first-year students intending to study engineering will be registered in Engineering Science. Before a student may be registered in a particular specialty of engineering, he must have an accumulated average of 2.00 and have completed all courses listed in the curriculum for the common first year of Engineering Science.

CHEMISTRY DEPARTMENT

EDWIN O. WIIG—DEPARTMENT HEAD

DEGREES—BACHELOR OF ARTS, BACHELOR OF SCIENCE,

MASTER OF ARTS, MASTER OF SCIENCE

MINIMUM REQUIREMENTS FOR DEGREES: B.A.,B.S. — 130 CREDITS

M.A.,M.S.— 30 ADDITIONAL CREDITS

Graduates in chemistry qualify in many fields: as teachers of chemistry, as supervisors in industry, as technical sales personnel; as research chemists in federal, state, municipal, academic or industrial laboratories, in premedicine or as laboratory technicians. The rapid introduction of chemical techniques in all branches of commerce and the creation of the many synthetic products has caused phenomenal growth in the profession since World War I. Specific mention may be made of the manufacture of plastics, glass, pigments, starch, explosives, dyes, gases, petroleum products, fine and heavy chemicals, perfumes, drugs, vitamins, hormones, solvents, specialized fuels including nuclear fuels, and the various metals and alloys.

The curriculum in chemistry offers an opportunity for broad scientific study. All students specializing in chemistry will meet basic requirements in general inorganic, analytical, organic, and physical chemistry, as well as mathematics and physics. These may be supplemented by courses in biology, education, engineering, geophysics, geology, metallurgy and advanced courses in biology, chemistry, mathematics, and physics, according to the interest of the individual student.

The general offerings of the Chemistry Department are arranged to allow students in less specialized programs to meet requirements for the requisite majors and minors. Such service courses and programs are an outstanding feature in the department.

The field of chemistry is highly developed. Graduate study is a necessity for the better opportunities in this field. A prospective chemist should elect additional courses in mathematics and physics. Sufficient study in two foreign languages, preferably German and French, to gain a reading knowledge is recommended.

REQUIREMENTS FOR A B.A. DEGREE WITH A MAJOR IN CHEMISTRY

1. Complete the general requirements for a B.A. Degree listed on page 28
 2. Complete the following foundation courses:
 - Chem. 101 and 102—General Chemistry
 - or
 - Chem. 201 and 202—General & Quantitative Chemistry 8 credits
 - Math. 106 and 200 9
 - Phys. 103 and 104—College Physics
 - or
 - Phys. 211-212—General Physics 8
 3. Complete 20 additional credits in Chemistry, including:
 - Chem. 212—Introductory Quantitative Chemistry 4
 - Chem. 223—Introductory Organic Chemistry
 - or
 - Chem. 321—Organic Chemistry 4
- A minor in Chemistry requires Chem. 101-2 or Chem. 201-2; Chem. 212, Chem. 223 or 321.

REQUIREMENTS AND CURRICULUM FOR A B.S. DEGREE WITH A MAJOR IN CHEMISTRY

FALL SEMESTER

FIRST YEAR 17 or 17½ Credits

Chem. 101—Gen. Chem. & Intro.	
Qualitative Analysis	4
Math. 106—Algebra & Trig.	5
Biol. 105—Fund. of Biology	4
Engl. 101—Comp. & Modes of Lit.	3
P.E. or Mil. Sci.	1 or 1½

SECOND YEAR 16 or 16½ Credits

Chem. 321—Organic Chem.	4
Phys. 211—General Physics	
or	
Phys. 103—College Physics	4
Math. 201—Calculus	4
Social Science Elective	3
P.E. or Mil. Sci.	1 or 1½

THIRD YEAR 16 Credits

Chem. 331—Physical Chemistry	4
Math. or Science Elective	3
Social Science Elective	3
Elective	6

FOURTH YEAR 15 Credits

Chemistry Elective	4
English Elective	3
Elective	8

SPRING SEMESTER

16 or 16½ Credits

Chem. 102—Gen. Chem. & Intro.	
Qualitative Analysis	4
Math. 200—Calculus	4
Biol. 106—Fund. of Biology	4
Engl. 102—Comp. & Modes of Lit.	3
P.E. or Mil. Sci.	1 or 1½

17 or 17½ Credits

Chem. 322—Organic Chem.	4
Phys. 212—General Physics	
or	
Phys. 104—College Physics	4
Math. 202—Calculus	4
Chem. 212—Intro. Quant. Anal.	4
P.E. or Mil. Sci.	1 or 1½

16 Credits

Chem. 332—Physical Chemistry	4
Math. or Science Elective	3
Social Science Elective	3
Elective	6

15 Credits

Chemistry or Science Elective	4
English Elective	3
Elective	8

A minor in Chemistry requires Chem. 101-2 or Chem. 201-2; Chem. 212, Chem. 223 or 321.

Chem. 201-202 may be taken instead of Chem. 101-102.

All electives must have the approval of the Head of the Department.

Students seeking a pre-professional chemistry major must complete one year of organic chemistry, organic qualitative analysis, one year of physical chemistry and one year of advanced chemistry.

E.S. 111-112 may be taken instead of Biol. 105-106.

Students who did not offer two years of a foreign language for admissions, must take one year of a foreign language, preferably German.

REQUIREMENTS FOR A M.A. OR M.S. DEGREE IN CHEMISTRY

1. A minimum of 30 credits of approved courses including Chemistry 697, Thesis.
2. Completion of the general graduate degree requirements listed on page 30.

Graduate students seeking a Master's Degree with a major in chemistry must develop a program in one of the general divisions of chemistry: analytical, biochemistry, inorganic, organic or physical. A student entering without preparation to take these courses may require additional time to earn his degree.

CHEMICAL ENGINEERING DEPARTMENT

EDWIN O. WIIG—DEPARTMENT HEAD

**DEGREES—BACHELOR OF SCIENCE (ENGINEERING SCIENCE) AND
BACHELOR OF ENGINEERING (CHEMICAL)
MASTER OF CHEMICAL ENGINEERING**

**MINIMUM REQUIREMENTS FOR DEGREES: B.S. — 130 CREDITS
M.Ch.E.—162 CREDITS**

Chemical Engineering is concerned with the development and application of manufacturing processes in which physical or chemical changes of materials are involved. The chemical engineer is primarily concerned with the development, design, and operation of equipment and processes for bringing about those desired changes on an industrial scale and at a profit. Chemical engineers find opportunities with manufacturers of all the numerous chemical products of commerce such as the heavy and fine chemicals, pulp and paper, plastics, drugs, dyes, soap, and mineral products; with atomic energy, missile and satellite programs; with petroleum refineries; with the mineral industry; with the food industries and with many other industries. These opportunities may involve research, design, control, operation and technical sales.

The curriculum provides a good foundation in basic chemical engineering and chemistry with a broad knowledge of general engineering. It provides an adequate foundation for graduate work or for entering specialized fields.

**REQUIREMENTS AND CURRICULUM FOR A B.S. DEGREE (ENGINEERING SCIENCE)
WITH A MAJOR IN CHEMICAL ENGINEERING**

FALL SEMESTER

FIRST YEAR	17½ Credits
Engl. 101—Comp. & Modes of Lit.	3
Math. 106—Algebra & Trig.	5
E.S. 101—Graphics	2
E.S. 111—Engr. Science	3
Econ. 121—Prin. of Econ.	3
P.E. or Mil. Sci.	1½

SECOND YEAR	16½ Credits
Math. 201—Calculus	4
Phys. 211—Gen. Physics	4
E.S. 207—Measurements	3
Chem. 201—Gen. Chem. & Quant. Chem.	4
P.E. or Mil. Sci.	1½

THIRD YEAR	17 Credits
E.S. 331—Mech. of Materials	3
Math. 302—Differential Equations	3
Chem. 321—Organic Chem.	4
Chem. 331—Physical Chemistry	4
E.E. 313—Elements of Elec. Engr.	3

FOURTH YEAR	14 Credits
E.S. 341—Fluid Mechanics	4
C.E. 441—Sanitary Engr.	3
Ch.E. 477—Unit Operations	3
Ch.E. 479—Unit Operations Lab.	1
Humanities, or Soc. Sci.	3

SPRING SEMESTER

	16½ Credits
Engl. 102—Comp. & Modes of Lit.	3
Mat. 200—Calculus	4
E.S. 102—Graphics	2
E.S. 112—Engr. Science	3
Soc. Sci. or Humanities	3
P.E. or Mil. Sci.	1½

	17½ Credits
Math. 202—Calculus	4
Phys. 212—Gen. Physics	4
E.S. 208—Mechanics	4
Chem. 202—Gen. Chem. & Quant. Chem.	4
P.E. or Mil. Sci.	1½

	17 Credits
C.E. 334—Phys. Prop. of Mat.	3
Chem. 322—Organic Chem.	4
Chem. 332—Physical Chemistry	4
E.E. 314—Elements of Elec. Engr.	3
Math. 310—Numerical Analysis	3

	15 Credits
E.S. 450—Engr. Mgt. & Oper.	3
E.S. 491—Engr. Seminar	3
Ch.E. 486—Chem. Engr. Thermo	3
Engl. 213—Advanced Exposition	3
Chem. or Engr. Elective	3

REQUIREMENTS FOR A M.Ch.E. DEGREE

1. Complete four-year program for B.S. Degree
2. Complete the following program of courses:

FIFTH YEAR	16 Credits		16 Credits
Math. 611—Math. of Phys. & Engr. ..	3	Math. 612—Math. of Phys. & Engr. ..	3
Ch.E. 433—Applied Chem. Kinetics ..	3	Ch.E. 488—Unit Operations	3
Ch.E. 487—Adv. Unit Operations	3	Ch.E. 490—Unit Operations Lab.	2
Ch.E. 493—Special Topics	1	Ch.E. 494—Special Topics	2
Engineering Elective	3	Engineering Elective	3
Approved Elec. in Chem., Physics, Engineering or Metallurgy	3	Approved Elec. in Chem., Physics, Engineering or Metallurgy	3

CIVIL ENGINEERING DEPARTMENT**E. F. RICE—DEPARTMENT HEAD****BACHELOR OF SCIENCE (ENGINEERING SCIENCE)****MASTER OF CIVIL ENGINEERING AND MASTER OF SCIENCE****MINIMUM REQUIREMENTS FOR DEGREES: B.S.—130 CREDITS****M.S.—30 ADDITIONAL CREDITS****M.C.E.—162 CREDITS**

Engineering embraces the wide range of cultural and professional subjects having to do with the planning, design, and construction of works necessary for civilization. Civil Engineering in particular deals with environmental control; bridges, buildings, dams, and harbor facilities; water resource development, and waste disposal; water power, irrigation works, and drainage; air, water, highway and railway transportation; construction and management; topographic surveying and geodesy; city management and developmental planning.

Candidates for the Bachelor of Science degree will pass a comprehensive examination in their general field.

Students will enter the fifth year in one of two programs: those whose goal is broad professional practice will ordinarily choose the curriculum leading to the degree Master of Civil Engineering; those whose interests or background favor a highly specialized program, with emphasis on research and/or advanced specialized study, will ordinarily select the degree Master of Science in Civil Engineering.

The first four years are common to each of these programs.

REQUIREMENTS AND CURRICULUM FOR A B.S. DEGREE (ENGINEERING SCIENCE) WITH A MAJOR IN CIVIL ENGINEERING**FALL SEMESTER****FIRST YEAR 17½ Credits**

Engl. 101—Comp. & Modes of Lit.	3
Math. 106—Algebra & Trig.....	5
E.S. 101—Graphics	2
E.S. 111—Engineering Science	3
Econ. 121—Principles of Econ.	3
P.E. or Mil. Sci.	1½

SECOND YEAR**16½ Credits**

Math. 201—Calculus 1	4
Phys. 211—Gen. Physics	4
E.S. 207—Measurements	3
Chem. 201—Gen. & Quant. Chem.	4
P.E. or Mil. Sci.	1½

SPRING SEMESTER**16½ Credits**

Engl. 102—Comp. & Modes of Lit.	3
Math. 200—Calculus	4
E.S. 102—Graphics	2
E.S. 112—Engineering Science	3
Soc. Sci. or Humanities	3
P.E. or Mil. Sci.	1½

17½ Credits

Math. 202—Calculus	4
Phys. 212—Gen. Physics	4
E.S. 208—Mechanics	4
Chem. 202—Gen. & Quant. Chem.	4
P.E. or Mil. Sci.	1½

THIRD YEAR		17 Credits			17 Credits
E.S. 331—Mech. of Materials	3		C.E. 334—Phys. Prop. of Materials	3	
Math. 302—Differential Equations	3		E.S. 346—Basic Thermodynamics	3	
E.S. 341—Fluid Mechanics	4		E.E. 314—Elem. of Elect. Engr.	3	
E.E. 313—Elem. of Elect. Engr.	3		Engl. 213—Advanced Exposition	3	
Geol. 101—General Geology	4		C.E. 344—Hydrology	2	
			Math. 312—Numerical Methods for Engineers	3	
FOURTH YEAR		15 Credits			14 Credits
C.E. 435—Soil Mechanics	3		E.S. 450—Engr. Mgt. & Oper.	3	
C.E. 441—Sanitary Engineering	3		C.E. 432—Structural Design	4	
C.E. 431—Structural Analysis	4		C.E. 402—Transportation Engr.	2	
C.E. 415—Surveying	3		C.E. 422—Foundation Engineering	3	
Sp. 211—Public Speaking	2		Soc. Sci. or Humanities	3	

REQUIREMENTS FOR A M.C.E. DEGREE

Each fifth-year student under this program shall be guided by a personal advisor and shall accumulate 32 semester hours of approved courses.

REQUIREMENTS FOR THE M.S. DEGREE IN CIVIL ENGINEERING

A student selecting this program will meet the general requirements for the Master's degree (page 30) plus the following:

32 semester hours of credit approved by his graduate committee, of which 6 to 12 semester hours will be C.E. 697, 698, Thesis.

ELECTRICAL ENGINEERING DEPARTMENT

JOHN G. TRYON—DEPARTMENT HEAD

**DEGREES—BACHELOR OF SCIENCE (ENGINEERING SCIENCE) AND
MASTER OF ELECTRICAL ENGINEERING**

**MINIMUM REQUIREMENTS FOR DEGREES: B.S. — 130 CREDITS
M.E.E.—162 CREDITS**

Electrical Engineering treats of the useful applications of electricity and magnetism. Electrical engineers develop, design, and operate equipment for generating and utilizing power, for communication, for automatic control, and for information processing.

The program emphasizes the study of electronic devices and circuits, with particular reference to communication. Due attention is given to power, control, and information processing. A student who completes the M.E.E. is ready to work in industry or continue with graduate study.

The curriculum of the Bachelor of Science (Engineering Science) is preparation for graduate study. It is not a complete program for professional responsibilities.

REQUIREMENTS AND CURRICULUM FOR A B.S.E.S. DEGREE (ELECTRICAL)

FALL SEMESTER		17 or 17½ Credits	SPRING SEMESTER		16 or 16½ Credits
Engl. 101—Comp. & Modes of Lit.	3		Engl. 102—Comp. & Modes of Lit.	3	
Math. 106—Algebra & Trig.	5		Math. 200—Calculus	4	
E.S. 101—Graphics	2		E.S. 102—Graphics	2	
E.S. 111—Engineering Science	3		E.S. 112—Engineering Science	3	
Econ. 121—Prin. of Econ.	3		Soc. Sci. or Humanities	3	
P.E. or Mil. Sci.	1 or 1½		P.E. or Mil. Sci.	1 or 1½	

SECOND YEAR		16 or 16½ Credits	17 or 17½ Credits	
Math. 201—Calculus	4		Math. 202—Calculus	4
Phys. 211—Gen. Physics	4		Phys. 212—Gen. Physics	4
E.E. 203—Fund. of Elect. Engr.	4		E.E. 204—Fund. of Elect. Engr.	4
E.S. 207—Measurements	3		E.S. 208—Mechanics	4
P.E. or Mil. Sci.	1 or 1½		P.E. or Mil. Sci.	1 or 1½
THIRD YEAR		17 Credits	16 Credits	
Math. 302—Diff. Equations	3		Math. 312—Numerical Methods	3
Chem. 201—Gen. & Quant. Chem.	4		Chem. 202—Gen. & Quant. Chem.	4
E.S. 331—Mechanics of Materials	3		Engl. 213—Advanced Exposition	3
*E.E. 333—Electronics	4		E.E. 334—Electronics	4
English Elective	3		Elective	2
FOURTH YEAR		15 or 16 Credits	15 or 16 Credits	
E.S. 341—Fluid Mechanics	4		E.S. 346—Basic Thermodynamics	3
*E.E. 403—Machines & Power	4		*E.E. 404—Machines & Power	4
E.E. 453—Circuit Theory			E.E. 454—Circuit Theory	
or			or	
Phys. 331—Elect. & Magnetism	3 or 4		E.E. 432—Fields, Lines, Antennas	4
Soc. Sci. or Humanities	3		E.S. 492—Engr. Seminar	3
Elective	0 or 1 or 2		Electives	1 or 2

Electives must have the approval of the department.

*Interchange of upper division courses that are not normally offered every year will be made by the department.

REQUIREMENTS FOR THE MASTER OF ELECTRICAL ENGINEERING

Each student will be guided by a committee, and should expect to:

1. Have met all requirements for the B.S. in Engineering Science with major in electrical engineering.
2. Meet all university requirements for the master's degree.
3. Take a total of 32 credits including E.E. 453-4, Circuit Theory; E.E. 471, Control; E.E. 462, Communication System, and E.S. 450, Engineering Management.
4. Do a project.

ENGINEERING MANAGEMENT

JOHN HILPERT—DEPARTMENT HEAD

DEGREE—MASTER OF SCIENCE

MINIMUM REQUIREMENTS FOR DEGREE—30 CREDITS (beyond a Bachelor's degree in one of the recognized branches of Engineering)

The Engineering Management curriculum is designed for graduate engineers who will hold executive or managerial positions in engineering, construction, or industrial organizations. It includes financial, legal, human relations, economic, and technical subjects which are useful to solve problems of management.

The curriculum will include graduate level core courses, business law, and additional course work either directed toward special problems such as Arctic Engineering, or work in one of the more general fields of engineering through projects or research in the application of engineering management principles.

FALL SEMESTER	15 Credits	SPRING SEMESTER	15 Credits
B.A. 331—Business Law	3	B.A. 332—Business Law	3
E. M. 611—Engineering Mgt.	3	E.M. 612—Engineering Mgt.	3
E.M. 605—Adv. Engr. Economy	3	E.M. 613—Engineering Mgt.	3
Electives	6	Project or Research	3
		Elective	3

Other courses may be substituted for Business Law if a student shows evidence of satisfactory completion of subject matter of B.A. 331 and 332 at the B grade level.

Electives must have the approval of the department.

GENERAL SCIENCE CURRICULUM

WILLIAM S. WILSON—DEPARTMENT HEAD

DEGREES—BACHELOR OF SCIENCE AND MASTER OF SCIENCE

MINIMUM REQUIREMENTS FOR DEGREES: B.S.—130 CREDITS

M.S.—30 ADDITIONAL CREDITS

Man's insatiable curiosity and his desire to understand the world about him has led him to the study of natural science and to the scientific method. Progress in this study has been fruitful and is so rapid now that the new discoveries in science are affecting our everyday lives, and most certainly will continue to do so in our lifetime. Consequently, every educated citizen needs a knowledge and appreciation of the philosophy and structure of science. It is generally agreed that the best method for achieving this is by direct study of a natural science, and all the curricula at the University of Alaska reflect this fact in their requirements.

Traditionally, the role of mathematics has been to simplify, interpret, and extend the boundaries of science. The fact that mathematics still includes, as well as transcends this function makes it a necessary study.

The major in General Science has been designed, as its name indicates, to provide an opportunity to become familiar with a considerable number of natural sciences and thus provide a firm background for specialization in any one of them as well as in certain technical professions. The fields lying on the border between the older sciences provide excellent opportunity for research. An acquaintance with the fundamentals of all of the natural sciences is of value in teaching science in high school and college and also in preparing for specialization in certain of the social sciences.

REQUIREMENTS AND CURRICULUM FOR A B.S. DEGREE WITH A MAJOR IN GENERAL SCIENCE**FALL SEMESTER****FIRST YEAR 16 or 16½ Credits**

Engl. 101—Comp. & Modes of Lit..... 3
 Biol. 105—Fund. of Biology..... 4
 Math. 106—Algebra & Trig..... 5
 Chem. 101—General Chem.

or
 Phys. 103—Coll. Physics 4
 P.E. or Mil. Sci.1 or 1½

SECOND YEAR 17 or 18½ Credits

Econ. 121—Prin. of Economics..... 3
 Phys. 103—Coll. Physics

or
 Chem. 101—General Chem..... 4
 Geol. 101—Gen. Geology 4
 For. Lang. or Dept. Elec.....6 or 5
 P.E. or Mil. Sci.1 or 1½

THIRD AND FOURTH YEARS

By the beginning of his junior year each student in General Science must decide upon his major field and, with the assistance of the person in charge of administering the curriculum in General Science, makes out a program for his third and fourth years of study.

Directions for making out the program:

1. Include the following courses:

Dept. Elec. or For. Lang..... 5
 Engl. 213—Adv. Exposition or
 selected literature 3
 Social Science Elective..... 3

SPRING SEMESTER**16 or 16½ Credits**

Engl. 102—Comp. & Modes of Lit..... 3
 Biol. 106—Fund. of Biology..... 4
 Math. 200—Calculus 4
 Chem. 102—General Chem.

or
 Phys. 104—Coll. Physics..... 4
 P.E. or Mil. Sci.1 or 1½

17 or 18½ Credits

Phys. 104—Coll. Physics
 or
 Chem. 102—General Chem..... 4
 Anth. 101—The Study of Man..... 3
 For. Lang. or Dept. Elec.....7 or 6
 Elective
 P.E. or Mil. Sci.1 or 1½

2. The major field must comprise a minimum of 20 credits above the foundation courses included in this curriculum. The courses scheduled must be approved in writing by the head of the major department. A major may be elected in Anthropology, Biological Sciences, Chemistry, Geology, Geophysics, Mathematics, or Physics.

3. The electives must include either two minors of at least 12 credits each above the foundation courses included in this curriculum, or a second major. Minors may be selected in any of the major departments listed or in the fields of Economics, Education (minimum 16 credits), English, French, German, Russian, History or Political Science.
4. All prerequisites of courses elected must be met, preferably by inclusion in the major.
5. One year of German, French, or Russian is required in the General Science curriculum. If the foreign language is postponed to the third year, the program described under Third and Fourth Year must be made out at the beginning of the Second Year.
6. Advanced Exposition is required unless written work in all courses indicates a good writing technique.
7. Courses selected to complete the requirements in the social sciences must be chosen from the following: Anthropology except Anth. 402 and Archaeology; Sociology; Economics; History; and Political Science.

REQUIREMENTS FOR A M.S. DEGREE IN GENERAL SCIENCE

1. A minimum of 30 credits of approved courses.
2. Completion of the General graduate degree requirements listed on page 30.

The Department of Mathematics, Physics, Chemistry, Biological Sciences, and Geology offer work toward the degree of Master of Science with a major in General Science. This degree may be described as a "breadth" rather than "depth" degree, and a candidate is ordinarily pursuing a course of study in which one of these departments is cooperating with at least one other department within the university. A prospective candidate must meet the general requirements for admission and for the awarding of the degree. At least 21 credits must be earned in science and mathematics. At least 12 credits must be earned in the department giving the degree. A thesis (maximum of three credits) or project (no credit) must be completed in the major department. It is not intended that the individual courses merely satisfy the credit but each course should contribute to the specific aim of the candidate, and the thesis or project should reflect this aim.

MATHEMATICS DEPARTMENT

RUSSELL E. CARR—DEPARTMENT HEAD

DEGREES—BACHELOR OF ARTS, BACHELOR OF SCIENCE,
AND MASTER OF SCIENCE

MINIMUM REQUIREMENTS FOR DEGREES: B.A.—130 CREDITS

B.S.—130 CREDITS

M.S.—30 ADDITIONAL CREDITS

The Department of Mathematics offers service courses to all the colleges of the University. In addition, the Department offers courses for students who major in mathematics. The number of positions available for trained mathematicians grows annually, and currently exceeds the supply.

A digital computer, installed in Spring, 1966, has improved the department's capacity to train mathematicians, scientists, and engineers.

In addition to meeting all the general requirements for the specific degree, certain mathematics courses are required of all mathematics majors. All electives must be approved by the Mathematics Department. Students preparing to teach mathematics in secondary schools must take the education courses necessary to obtain an Alaska Teaching Certificate.

REQUIREMENTS FOR A B.A. DEGREE WITH A MAJOR IN MATHEMATICS

Complete the following courses beyond Math. 202:

Math. 302—Differential Equations	3	credits
Math. 303—Introduction to Modern Algebra.....	3	
Math. 314—Linear Algebra	3	
Math. 371—Probability	3	
Math. 401—Advanced Calculus	3	
Math. 402—Advanced Calculus	3	
Math. 417—Differential Geometry	3	

The B.A. degree requires completion of the above major requirements as well as the general requirements for the B.A. degree as listed on page 28.

A minor in Mathematics requires completion of Math. 200, Math. 201, Math. 202, and six additional credits in Mathematics at the 300 level or above.

REQUIREMENTS FOR A B.S. DEGREE WITH A MAJOR IN MATHEMATICS

FALL SEMESTER

FIRST YEAR 17 or 17½ Credits

Engl. 101—Comp. & Modes of Lit.....	3
E.S. 111—Engr. Sci.	3
*Math. 106—Algebra & Trig.....	5
P.E. or Mil. Sci.	1 or 1½
Foreign Language	5

SECOND YEAR 16 or 16½ Credits

Math. 201—Calculus	4
Phys. 211—General Physics.....	4
Approved Elective	3
Chem. 201—Gen. Chem. & Quant.	4
Chem.	4
P.E. or Mil. Sci.	1 or 1½

THIRD YEAR 17 Credits

Math. 302—Differential Equations	3
Math. 303—Intro. to Modern Alg.....	3
Math. 371—Probability	3
English Elective	3
Approved Electives	5

FOURTH YEAR 17 Credits

Math. 401—Advanced Calculus	3
Social Sci. Elective.....	3
Approved Electives	11

SPRING SEMESTER

16 or 16½ Credits

Engl. 102—Comp. & Modes of Lit.....	3
E.S. 112—Eng. Sci.	3
Math. 200—Calculus	4
P.E. or Mil. Sci.	1 or 1½
Foreign Language	5

16 or 16½ Credits

Math. 202—Calculus	4
Phys. 212—General Physics.....	4
Approved Electives	3
Chem. 202—Gen. Chem. & Quant.	4
Chem.	4
P.E. or Mil. Sci.	1 or 1½

THIRD YEAR 17 Credits

Math. 417—Differential Geometry	3
Math. 314—Linear Algebra	3
Social Sci. Elective	3
English Elective	3
Approved Electives	5

FOURTH YEAR 17 Credits

Math. 402—Advanced Calculus	3
Social Sci. Elective.....	3
Approved Electives	11

*Math 106 may be omitted if the student has adequate preparation.

REQUIREMENTS FOR A M.S. DEGREE IN MATHEMATICS

1. A minimum of 30 credits of approved courses.
2. Satisfactory result of the final examination, including either the defense of a thesis if the candidate has elected to write one or a demonstration by other means by the candidate of proficiency at the graduate level in mathematics.
3. Completion of the general requirements for a graduate degree listed on page 30.

MECHANICAL ENGINEERING DEPARTMENT

E. F. RICE—DEPARTMENT HEAD

DEGREES—BACHELOR OF SCIENCE (ENGINEERING SCIENCE)

MASTER OF MECHANICAL ENGINEERING

MINIMUM REQUIREMENTS FOR DEGREES: B.S.—130 CREDITS

M.M.E.—162 CREDITS

Mechanical Engineering embraces professional disciplines concerned with the application of scientific principles to the design of mechanical equipment for the benefit of mankind. Emphasis is placed on the phases of Mechanical Engineering of special importance to Alaska; power, transportation, and environmental control.

Candidates for the Bachelor of Science degree will pass a comprehensive examination in their general field.

Students will enter the fifth year in one of two programs: those whose goal is broad professional practice will ordinarily choose the curriculum leading to the degree

Master of Mechanical Engineering; those whose interests or background favor a highly specialized program with emphasis on research and/or advanced specialized study, will ordinarily select in the degree Master of Science in Mechanical Engineering.

The first four years are common to each of these programs.

REQUIREMENTS AND CURRICULUM FOR A B.S. DEGREE (ENGINEERING SCIENCE) WITH A MAJOR IN MECHANICAL ENGINEERING

FALL SEMESTER

FIRST YEAR 17½ Credits

Engl. 101—Comp. & Modes of Lit.....	3
Math. 106—Algebra & Trig.....	5
E.S. 101—Graphics	2
E.S. 111—Engineering Science.....	3
Econ. 121—Prin. of Econ.	3
P.E. or Mil. Sci.	1½

SECOND YEAR 16½ Credits

Math. 201—Calculus	4
Phys. 211—Gen. Physics	4
E.S. 207—Measurements	3
Chem. 201—Gen. & Quant. Chem.....	4
P.E. or Mil. Sci.	1½

THIRD YEAR 16 Credits

E.E. 313—Elem. of E.E.	3
Math. 302—Differential Equations	3
E.S. 331—Mech. of Materials	3
E.S. 341—Fluid Mechanics	4
M.E. 321—Industrial Processes	3

FOUR YEAR 16 Credits

M.E. 401—Machine Design	4
M.E. 413—M.E. Thermodynamics	3
M.E. 441—Intro. Heat Transfer.....	3
Social Science or Humanities.....	3
Approved Technical Elective.....	3

SPRING SEMESTER

16½ Credits

Engl. 102—Comp. & Mode of Lit.....	3
Math. 200—Calculus	4
E.S. 102—Graphics	2
E.S. 112—Engineering Science	3
Social Science or Humanities.....	3
P.E. or Mil. Sci.	1½

17½ Credits

Math. 202—Calculus	4
Phys. 212—Gen. Physics	4
E.S. 208—Mechanics	4
Chem. 202—Gen. & Quant.	4
Chem.	4
P.E. or Mil. Sci.	1½

15 Credits

E.E. 314—Elem. of E.E.	3
Math. 312—Num. Methods	3
M.E. 302—Kinematics of Mach.....	3
Engl. 213—Advanced Exposition.....	3
E.S. 346—Basic Thermodynamics	3

16 Credits

M.E. 418—Power Analysis	4
M.E. 412—Space Conditioning	3
E.S. 450—Engr. Mgt. & Oper.....	3
Met. 304—Intro. to Metallurgy.....	3
Approved Technical Elective.....	3

REQUIREMENTS FOR THE DEGREE MASTER OF MECHANICAL ENGINEERING

Each fifth year student under this program will be guided by a personal advisor and shall accumulate 32 semester hours of approved courses. M.E. students may alternatively enroll in Engineering Management under the requirements of that program.

PHYSICS DEPARTMENT

ROGER S. SHERIDAN—DEPARTMENT HEAD

DEGREES—BACHELOR OF ARTS, BACHELOR OF SCIENCE,

MASTER OF SCIENCE, AND DOCTOR OF PHILOSOPHY

MINIMUM REQUIREMENTS FOR DEGREES: B.A.—130 CREDITS

B.S.—130 CREDITS

M.S.—30 ADDITIONAL CREDITS

Ph.D.—NO FIXED CREDITS

The science of physics is concerned with the nature of matter and energy and encompasses all phenomena in the physical world from elementary particles to the structure and origin of the universe. Physics provides, together with mathematics and chemistry, the foundation for work in all fields of physical science and engineering, and contributes to other fields such as biology, geology and marine science.

UNDERGRADUATE PROGRAM — The undergraduate curriculum aims at a good foundation in general physics with emphasis on the experimental aspects. It provides opportunities for careers in education and industry, and opens the door to advanced work in physics and related sciences.

GRADUATE PROGRAM — The graduate work is intimately connected with the research activities of the Geophysical Institute which offer ample thesis material in the fields of the atmospheric and space sciences and in solid earth physics. The research program of the Geophysical Institute currently emphasizes investigations of auroral and ionospheric physics geomagnetism and earth currents, radio wave propagation and scattering, solar radio astronomy and solar-terrestrial relations, polar meteorology and glaciology, seismology and solid earth physics.

A graduate student may designate his major field as physics or geophysics. He will pursue his studies under the supervision of an Advisory Committee consisting of his major professor (chairman), two approved faculty members, and the department head (ex officio). The Committee advises on the course of study to be followed and determines the background courses (mathematics, physics, astronomy, chemistry, geophysics) necessary to support the major field.

The graduate course offerings include the basic material generally required for research and teaching in physics or related fields, and specialized courses in the research areas mentioned above.

REQUIREMENTS FOR A B.A. DEGREE WITH A MAJOR IN PHYSICS

1. Complete the general requirements for a B.A. Degree listed on page 28.
2. Complete the following foundation courses:
Phys. 103-104—College Physics 8 credits
3. Complete a minor in Mathematics, which includes Math. 200, 201, 202, and 6 credits at the 300 level or above.
4. Complete 20 credits of approved courses in Physics.
A minor in Physics requires 12-16 credits; or Physics 103, 104, 301 and 302.

REQUIREMENTS AND CURRICULUM FOR A B.S. DEGREE WITH A MAJOR IN PHYSICS

FALL SEMESTER

FIRST YEAR 15 or 15½ Credits

Engl. 101—Comp. & Modes of Lit.....	3
Phys. 111—General Physics.....	3
Math. 106—Algebra and Trig.....	5
P.E. or Mil. Sci.....	1 or 1½
*Applied Electives	3

SECOND YEAR 16 or 16½ Credits

Math. 201—Calculus	4
Phys. 211—General Physics	4
Foreign Language	3 or 5
P.E. or Mil. Sci.....	1 or 1½
*Approved Electives	4 or 2

THIRD YEAR 17 Credits

Math. 302—Differential Equations	3
Phys. 311—Classical Physics	4
Phys. 331—Electricity & Magnetism....	3
*Approved Electives	5

FOURTH YEAR 17 Credits

Math. 401—Advanced Calculus	3
Phys. 411—Modern Physics	4
Phys. 481—Advanced Physics Lab.....	2
*Approved Electives	8

SPRING SEMESTER

15 or 15½ Credits

Engl. 102—Comp. & Modes of Lit.....	3
Phys. 112—General Physics.....	3
Math. 200—Calculus	4
P.E. or Mil. Sci.....	1 or 1½
*Approved Electives	4

16 or 16½ Credits

Math. 202—Calculus	4
Phys. 212—General Physics	4
Foreign Language	3 or 5
P.E. or Mil. Sci.....	1 or 1½
*Approved Electives	4 or 2

17 Credits

Math. 314—Linear Algebra	3
Phys. 312—Classical Physics	4
Phys. 332—Electricity & Magnetism....	3
*Approved Electives	5

17 Credits

Math. 402—Advanced Calculus	3
Phys. 412—Modern Physics	4
Phys. 482—Advanced Physics Lab.....	2
Phys. 486—Experimental Physics	

or	
Phys. 494—Special Topics	3
*Approved Electives	5

*9 credits of electives must be Social Science and 6 must be English.

REQUIREMENTS FOR A M.S. DEGREE IN PHYSICS OR GEOPHYSICS

1. A minimum of 30 credits of approved courses, including Phys. 697 or 698, Thesis.
2. Completion of the general requirements for a graduate degree listed on page 30.

REQUIREMENTS FOR A Ph. D. DEGREE IN PHYSICS OR GEOPHYSICS

1. Completion of the requirements for the doctoral degree set forth on page 32.

ELECTRONICS TECHNOLOGY PROGRAM**FOYE L. GENTRY—DEPARTMENT HEAD****DEGREE—ASSOCIATE IN ELECTRONICS TECHNOLOGY****MINIMUM REQUIREMENTS FOR DEGREE: A.E.T.—65 CREDITS**

The program in electronics technology prepares people to maintain, install and operate complex electronic equipment, such as broadcast transmitters, airways beacons, carrier telephone systems, radars and digital computers. The program is not introductory electrical engineering which emphasizes design; it is electronics technology, which emphasizes maintenance.

Enrollment is limited. Write to the Department Head for information on admission to this program.

REQUIREMENTS AND CURRICULUM FOR AN ASSOCIATE DEGREE IN ELECTRONIC TECHNOLOGY**FALL SEMESTER****FIRST YEAR 16 Credits**

E.T. 51—DC Circuits	4
E.T. 52—AC Circuits	4
E.T. 55—Electronics Practice I.....	3
E.T. 59—Math for Electronic	5

SECOND YEAR**17 Credits**

E.T. 71—Electronic Circuits II.....	5
E.T. 72—Electronic Circuits III.....	4
E.T. 75—Microwave Electronics	4
E.T. 77—System Maintenance	4

SPRING SEMESTER**17 Credits**

E.T. 61—Tubes & Semiconductors.....	4
E.T. 62—Electronic Circuits I.....	3
E.T. 63—Electronic Systems I.....	4
E.T. 66—Electronics Practice II.....	3
Engl. 67—Elementary Exposition.....	3

16 Credits

E.T. 83—Test Instruments	3
E.T. 84—Electronic System II.....	5
B.A. 66 B.A. for Technicians.....	4
P.S. 68—Soc Sci. for Tech.....	4



Blanket toss, borrowed from Eskimo custom, is one of the most popular activities during the university's Winter Carnival, held in February of each year.



Snowshoe softball ranks high on the list of winter sports activities with students. Other sports include ice skating, downhill and cross-country skiing and hockey.

Course Descriptions

Courses offered by the University are listed alphabetically by department.

COURSE NUMBERS—The first numeral of a course numbered in the hundreds indicates the year in which the course is normally offered in its own department. Odd numbers are assigned to courses given in the fall semester and even numbers to courses given in the spring semester. For example, English 101 is given for first-year students in the first or fall semester. English 342 is given for third-year students in the second or spring semester.

"1-49—Non-credit courses.

"50-99—Courses designed for associate degree or a technical certificate credit; they are not applicable to the baccalaureate requirements.

"300-499—Upper division courses. Freshmen and sophomores must petition the Academic Council for permission to take these groupings unless such courses are required in the first two years of their curriculum as printed in this catalog.

"600-699—Graduate courses to which a few well qualified undergraduates may be admitted with the permission of the head of the department in which the course is offered. "491-492 and 681-692 indicate Seminars, 493-494 and 693-694 indicate Special Topics, and 697-698 indicate Thesis or Dissertation in those departments where listed."

COURSE CLASSIFICATIONS—Subject and courses are classified as follows:

Natural Sciences
 Anthropology 402
 Biological Sciences
 Chemistry
 Geography 201, 401
 Geology
 Mathematics
 Physics

Social Sciences
 Anthropology
 Economics
 Geography
 History
 Home Economics 236, 301
 Law
 Political Science
 Psychology
 Sociology

Humanities
 Art
 English
 Foreign Language
 and Literature
 Journalism
 Linguistics
 Music
 Philosophy
 Speech and Drama

ACCOUNTING

Acc. 215 Accounting Principles (0+6)
 216

3 Credits
 3 Credits
 Fall
 Spring

Accounting as a factor in business management and control.

Fall semester: Accounting principles as they apply to the organization and conduct of business.

Spring semester: Application of accounting principles and practices to business situations; preparation of financial statements.

Prerequisite: Acc. 215—Sophomore standing or permission of the instructor. Acc. 216—Acc. 215 or equivalent.

Acc. 293 Special Topics
 294

Credits Arranged
 Credits Arranged
 Fall
 Spring

Acc. 315 Intermediate Accounting (0+6) 3 Credits Fall

Advanced principles and techniques. Relation of accounting to business management and control; accounting practices and procedures designed to reflect the financial position of a business and the results of its operation. *Prerequisite: Acc. 216 or equivalent.*

Acc. 316 Analysis of Financial Statements (0+6) 3 Credits Spring

Continuation of Acc. 315. Interpretation of financial statements and analysis of accounting data for business planning, investment and evaluation purposes. *Prerequisite: Acc. 315 or equivalent.*

Acc. 318 Accounting Systems (0+6) 3 Credits Spring

Function of commercially developed accounting systems; study and solution of procedural problems at the working level; use and adaptation of bookkeeping machines and electronic data processing to cash control, customer billings, payables, payrolls and payroll taxes, sales analysis and inventory and cost control. *Prerequisite: Acc. 315 or equivalent. Offered in alternate years.*

**Acc. 393 Special Topics Credits Arranged Fall
Credits Arranged Spring**

**Acc. 413 Federal and State Tax Accounting (0+6) 3 Credits Spring
414 3 Credits Fall**

Fall semester: Basic principles of the federal income tax; application of these principles to individual taxpayers; practice in the preparation of tax returns.

Spring semester: Application of income tax principles to business operations; state taxes and their operation; practice in the preparation of tax returns for business entities. *Prerequisite: Acc. 315.*

Acc. 416 Advanced Accounting (0+6) 3 Credits Spring

Accounting problems involved in creation, operation and liquidation of business entities. Consideration of accounting problems, most frequently encountered in partnerships, corporations, estates, trusts and receiverships. *Prerequisite: Acc. 315 or equivalent. Offered in alternate years.*

Acc. 417 Cost Accounting (3+0) 3 Credits Fall

Principles and procedures for determining production and operating costs; factors in reducing costs; interpretation and analysis of cost data. *Prerequisite: Acc. 315 or equivalent.*

Acc. 418 Auditing (3+0) 3 Credits Spring

Principles, standards and working procedures of audit verification and analysis; functions of public accountants and internal auditors. *Prerequisite: Acc. 315 or equivalent.*

**Acc. 493 Special Topics Credits Arranged Fall
494 Credits Arranged Spring**

An area in which the student has a special interest. Independent research, outside reading, and periodic reports are included. Admission by arrangement.

Acc. 613 Accounting for Specific Industries Credits Arranged Fall

For students wishing to make an intensive study of an industry; who have access to sufficient private accounting data to form the basis of analytical research; and written permission to use the data. Material developed cannot be used to fulfill the requirements to Acc. 697 or 698. *Prerequisite: Graduate standing and 15 hours of accounting including Acc. 416, 417 and 418 or equivalent.*

Acc. 616 Advanced Tax Problems Credits Arranged Spring

Problems in complex areas of Federal income tax including partnerships, corporations, fiduciaries, contractors, pensions, annuities, reorganizations and non-taxable exchanges. *Prerequisite: Graduate standing and 15 hours of accounting including Acc. 413, 414, 416 or equivalent. Offered as demand warrants.*

Acc. 617 Advanced Auditing	Credits Arranged	Fall
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Advanced aspects of auditing including requirements of the Securities and Exchange Commission, state regulatory bodies, banking and credit agencies, stock exchanges, and the American Institute of Certified Public Accountants. The course will use illustrative audit wherein working papers and a typical audit report must be prepared. *Prerequisite: Graduate standing and 15 hours of accounting including Acc. 416 and 418, or equivalent. Offered as demand warrants.*

Acc. 618 Advanced Cost Accounting	Credits Arranged	Spring
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More complex areas of cost accounting, including standard costs, cost variations, analysis of manufacturing costs, and techniques and procedures of affecting economies in production and distribution. *Prerequisite: Graduate standing and 15 hours of accounting including Acc. 417 and 418, or equivalent. Offered as demand warrants.*

Acc. 621 Advanced Accounting Problems (0+6)	3 Credits	Fall
622	3 Credits	Spring

Analytical study of material covered in C.P.A. examinations and professional writings on accounting subjects. The course involves working problems under examination conditions and discussion of points involved. *Prerequisite: Senior or graduate standing and 15 hours of accounting including Acc. 416, 417 and 418, or equivalent.*

Fall semester: Consideration of timely questions as covered by the auditing and theory of accounts sections of recent C.P.A. examinations.

Spring semester: Analysis of current accounting development as presented in recent examinations in accounting practice.

Acc. 627 Professional Accounting (0+6)	1, 2, or 3 Credits	Fall
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A study of accounting in specific areas of professional practice. Separate consideration and coverage is given to budgeting, controllership and public accounting. *Prerequisite: Senior or graduate standing and 15 hours of accounting. Offered as demand warrants.*

Acc. 628 Governmental and Institutional Accounting	Credits Arranged	Spring
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Procedures and systems employed by states, municipalities and other governmental units. Offered as demand warrants. *Prerequisite: Senior or graduate standing and 16 hours of accounting.*

Acc. 629 Accounting Theory (3+0)	2 Credits	Fall
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Emphasis on current proposals and developments, to meet the needs of those preparing to take the C.P.A. examination or who expect to teach accounting. Offered as demand warrants. *Prerequisite: Senior or graduate standing or permission of instructor.*

Acc. 629 Accounting Seminar (3+0)	2 Credits	Fall
630	2 Credits	Spring

Discussion of areas such as new developments and proposals, problems in public practice, inter-professional relationships and similar topics. Offered as demand warrants. *Prerequisite: Graduate standing or permission of instructor.*

Acc. 631 Internship	Credits Arranged	Fall
	Credits Arranged	Spring

For students with employment experience beyond the clerical level. Independent Research and reading is required which will supplement knowledge and experience gained from the employment internship. Credit is not given for material used in Acc. 613. The work in this course may partially fulfill requirements for Acc. 697-698. *Prerequisite: Graduate standing, advance approval of the instructor and written permission of the employer that the private accounting material may be used for class purposes.*

Acc. 693 Special Topics	Credits Arranged	Fall
694	Credits Arranged	Spring

Prerequisite: Graduate standing and permission of the instructor.

Acc. 697 Thesis	Credits Arranged	Fall
698	Credits Arranged	Spring

AGRICULTURAL SCIENCE

Ag. 301 Agricultural Prices (3+0) 3 Credits Fall

Analysis and interpretation of factors affecting agricultural prices; study of price movements; price policy. *Prerequisites: Econ. 121, 122. Offered as demand warrants.*

Ag. 310 Animal Husbandry (2+3) 3 Credits Spring

Origin, history and economic significance of major breeds of dairy and beef cattle, swine, sheep and poultry. Introduction to management, with special reference to Alaska. *Offered as demand warrants.*

Ag. 382 Horticulture (2+3) 3 Credits Spring

Survey; principles of propagation, culture and use; soil, light and water requirements; planting and harvesting; insect, weed and disease control. *Prerequisite: Biol. 105, 106. Offered as demand warrants.*

Ag. 404 Agricultural Marketing (3+0) 3 Credits Spring

Principles and practices of agricultural marketing; prices and costs; case studies. *Prerequisite: Econ. 121. Offered as demand warrants.*

Ag. 491 Seminar (Arrange) Credits Arranged Spring
492 Credits Arranged Fall

Unique problems in agricultural development of Alaska, the role of agriculture in Alaska's economy, and recent research advances in the State. Subject matter fields: Economics, agronomy, animal industry, soils, horticulture and agricultural engineering. *Offered as demand warrants.*

Ag. 493 Special topics (Arrange) Credits Arranged Fall
494 Credits Arranged Spring

Various subjects studied principally through directed reading and supervised projects. *Offered as demand warrants.*

ANTHROPOLOGY

Anth. 101 The Study of Man (3+0) 3 Credits Fall

Introduction to Anthropology, including the physical and cultural aspects of man.

Anth. 102 The Study of Man (3+0) 3 Credits Spring

Introduction to Anthropology, including the physical and cultural aspects of man. A continuation of Anth. 101. *Prerequisite: Anth. 101.*

Anth. 203 World Ethnography (3+0) 3 Credits Fall

A descriptive study of peoples of the world: Europe, Asia and Africa.

Anth. 204 World Ethnography (3+0) 3 Credits Spring

A descriptive study of peoples of the world: the New World and the Pacific.

Anth. 213 Culture History (2+3) 3 Credits Spring

A study of the great inventions of man and the development of technology. *Prerequisites: Anth. 101-102 or Anth. 203, 204.*

Anth 214 Archaeology (3+3) 4 Credits Fall

The history of archaeology and a study of its methods. *Prerequisite: Anth. 101 and Anth. 102.*

- Anth. 304 Africa (3+0)** 3 Credits Fall or Spring
Peoples and cultures of Africa. *Prerequisite: Anth. 101.*
- Anth. 306 Oceania (3+0)** 3 Credits Spring
Ethnic groups and cultures of Indonesia, Micronesia, Melanesia, Polynesia and Australia. *Prerequisite: Anth. 101.*
- Anth. 312 North American Archaeology (3+0)** 3 Credits Fall or Spring
Prehistoric cultures north of Mexico. Archaeological methods peculiar to America and problems related to the prehistory of the Arctic regions. *Prerequisite: Anth. 212.*
- Anth. 313 Archaeology of Central and South America (3+0)** 3 Credits Fall or Spring
Continuation of Anthropology 312. Development of civilization in the Valley of Mexico and in the Mayan and Andean areas. *Prerequisite: Anth. 312 or permission.*
- Anth. 326 Arctic Ethnology (3+0)** 3 Credits Spring
Ethnic groups and cultures of the circumpolar area. *Prerequisites: Anth. 101-102 or Anth. 203, 204.*
- Anth. 328 Arctic Archaeology (2+3)** 3 Credits Spring
Problems of the Prehistory of the Arctic. *Prerequisite: Anth. 212.*
- Anth. 329 Peoples of Central and Northern Asia (3+0)** 3 Credits Fall
Native peoples of Siberia and adjoining regions. *Prerequisite: Anth. 101.*
- Anth. 335 North American Ethnology (3+0)** 3 Credits Fall
Tribal life of American Indians north of Mexico. *Prerequisites: Anth. 101-102 or Anth. 203, 204.*
- Anth. 336 Ethnology of Central and South America (3+0)** 3 Credits Spring
Racial distribution, material and social cultures of peoples of Central and South America. *Prerequisite: Anth. 101.*
- Anth. 342 Alaska Natives (3+0)** 3 Credits Spring
Indians and Eskimos of Alaska. Social organization, social customs and problems of acculturation. Primarily for students who expect to teach in Alaska. *Prerequisite: Anth. 101, Hist. 341 or Junior Standing.*
- Anth. 402 Physical Anthropology (3+3)** 4 Credits Fall
Basic Physical Anthropology designed for students preparing for professional work in Anthropology and pre-medical students. *Prerequisites: Anth. 102 or permission.*
- Anth. 423 Social Structure (3+0)** 3 Credits Fall
The social systems of native peoples. *Prerequisites: Anth. 101-102 or Anth. 203, 204 and Junior Standing.*
- Anth. 424 Religion and Magic (3+0)** 3 Credits Spring
Descriptive and comparative study of religious belief in native societies. *Prerequisites: Anth. 203, 204 or any course in Ethnology.*
- Anth. 425 Primitive Arts (3+0)** 3 Credits Spring
The visual, literary and musical arts of native people. *Prerequisites: Anth. 101-102 and Junior Standing.*

Anth. 427 Contemporary Problems (3+0) 3 Credits Fall
 Analysis of the contemporary problems of the native populations, emphasizing the peoples of Alaska. *Prerequisite: Permission.*

Anth. 430 Anthropological Field Methods (1+3) 2 Credits Spring
 Laboratory and demonstration to prepare the student for field work and inform him of recently developed techniques of collecting field data. Concentration on one of following: Archaeology, ethnography, physical anthropology. *Prerequisite: Junior Standing and permission of instructor. As demand warrants.*

Anth. 491 Seminar in American Archaeology (2+0) 2 Credits Fall or Spring
 Archaeological problems in America and prescribed research utilizing current literature. *Prerequisite: Anth. 312.*

Anth. 492 Seminar in American Ethnology (2+0) 2 Credits Fall or Spring
 Anthropological literature and research in selected problems. *Prerequisite: Anth. 335, 423, or permission.*

Anth. 493 Special Topics Credits Arr. Fall
494 Credits Arr. Spring
 Various subjects studied in special fields of anthropology. *Prerequisite: Senior Standing or permission.*

Anth. 495 Research Credits Arr. Fall
496 Credits Arr. Spring
 Supervised research in the fields of Anthropology represented in the Department program. *Prerequisite: Permission.*

Anth. 497 Thesis or Project Credits Arr. Fall
498 Credits Arr. Spring
 Advanced students who have shown special aptitude for individual study or research may elect thesis or project work, on approval of the Head of the Department.

Anth. 691 Seminar Credits Arr. Fall
692 Credits Arr. Spring
 Topics include physical and social anthropology, comparative archaeology, ethnological theory. *Admission by arrangement.*

Anth. 693 Special Topics Credits Arr. Fall
694 Credits Arr. Spring
 Various subjects studied, principally by directed study, discussion and research. *Admission by arrangement.*

ART

Art 55 Elementary Drawing (0+4) 2 Credits Fall
56 2 Credits Spring
 Line drawing, shading, layout and design.

Art 57 Elementary Printmaking (0+4) 2 Credits Fall
58 2 Credits Spring
 Blockprinting, etching and engraving.

Art 59 Elementary Metalcraft (0+4) 3 Credits Fall
60 3 Credits Spring
 Metalcraft techniques. Designing, annealing and soldering.

Art 61	Elementary Sculpture (0+6)	3 Credits	Fall
62		3 Credits	Spring

Clay modeling, stone carving, woodcarving.

Art 63	Elementary Oil Painting (0+6)	3 Credits	Fall
64		3 Credits	Spring

Characteristics of pigments, preparation of canvas, layout and design, painting.

Art 65	Elementary History of World Art (3+0)	3 Credits	Fall
66		3 Credits	Spring

Artistic endeavors throughout the history of Western man.

Art 105	Freehand Drawing (0+4)	2 Credits	Fall
106		2 Credits	Spring

Pictorial design, life drawing, landscape drawing, using varied techniques and media.

Art 161	Design and Color Theory (1+3)	2 Credits	Fall
162		2 Credits	Spring

Creative designing and rendering. Emphasis on mass-space relationships and composition, value transitions and hues, colorwheel, color and intensity movements.

Art 205	Life Drawing and Composition	2 Credits	Fall
206		2 Credits	Spring

Problems in drawing from life, exploring possibilities in pictorial design and composition, still life, anatomy and perspective. *Prerequisite: Art 106 or permission.*

Art 207	Beginning Printmaking (0+4)	2 Credits	Fall
208		2 Credits	Spring

Various intaglio and relief printing media, engraving, etching, woodcut and other graphic media. *Prerequisite: Art 106 or permission.*

Art 209	Beginning Metalcraft (0+4)	3 Credits	Fall
210		3 Credits	Spring

Material processes and techniques for silver jewelry and silver-smithing. *Prerequisite: Art 161 or permission.*

Art 211	Beginning Sculpture (0+6)	3 Credits	Fall
212		3 Credits	Spring

Original, creative studies in clay, wood and stone sculpture. Emphasis on mastery of techniques and material processes.

Art 213	Beginning Oil Painting (0+6)	3 Credits	Fall
214		3 Credits	Spring

Basic investigation of materials and their use in expressing the students' ideas. *Prerequisite: Art 106 and 162 or permission.*

Art 261	History of World Art (3+0)	3 Credits	Fall
262		3 Credits	Spring

Origins of art and its progressive development from the beginning to contemporary art; emphasis on change and progress. *Prerequisite: Sophomore standing. Term paper required each semester.*

Art 305	Advanced Life Drawing and Anatomy (0+4)	2 Credits	Fall
306		2 Credits	Spring

Creative approach, including a comprehensive study of functional human anatomy, with the human figure as an art motif. *Prerequisite: Art 206 or permission.*

Art 307	Intermediate Printmaking (0+4)	2 Credits	Fall
308		2 Credits	Spring

Additional study and experimentation in intaglio, relief and planographic printing techniques, including lithography, serigraphy and color printing. *Prerequisite: Art 208 or permission.*

Art 309	Intermediate Metalcraft (0+4)	3 Credits	Fall
310		3 Credits	Spring

Material processes and techniques for silver jewelry and silversmithing; creating problems in artistic design. *Prerequisite: Art 210 or permission.*

Art 311	Intermediate Sculpture (0+6)	3 Credits	Fall
312		3 Credits	Spring

Creative studies in welding, plaster casting, concrete casting, sandcasting, clay modeling, wood carving and stone carving. *Prerequisite: Art 212 or permission.*

Art 313	Intermediate Oil Painting (0+4)	2 Credits	Fall
314		2 Credits	Spring

Creating pictorial problems in oil painting techniques, still life, composition, and figure painting. *Prerequisite: Art 214 or permission.*

Art 407	Advanced Printmaking (0+4)	2 Credits	Fall
408		2 Credits	Spring

Advanced study in all printing media. *Prerequisite: Art 308 or permission.*

Art 409	Advanced Metalcraft (0+4)	3 Credits	Fall
410		3 Credits	Spring

Continued investigation and experimentation of intermediate Metalcraft. *Prerequisite: Art 310 or permission.*

Art 411	Advanced Sculpture (0+6)	3 Credits	Fall
412		3 Credits	Spring

Styro-foam burn-out, aluminum, bronze casting, steel welding, repouse sculpture, plastics, inlay, and architectural sculpture. *Prerequisite: Art 312 or permission.*

Art 413	Advanced Oil Painting (0+4)	2 Credits	Fall
414		2 Credits	Spring

Exploration and development of the creative approach to various techniques involved in figure, landscape, abstract and non-objective painting and pictorial design. *Prerequisite: Art 314 or permission.*

Art 419	History of Northern Renaissance	3 Credits	Fall
420	Art (3+0)	3 Credits	Spring

Pre-Renaissance Painting, sculpture, architecture and minor arts of the Netherlands through the Netherlandish Renaissance; Renaissance Painting in France and Germany; the humanist and reformative influences on artistic developments.

Art 493	Special Topics	Credits Arr.	Fall
494		Credits Arr.	Spring

Various subjects in art. *Admission by arrangement.*

Art 691 692	Art Seminar	Credits Arr.	
		As demand warrants	
Art 693 694	Special Topics	Credits Arr.	Fall
		As demand warrants	Spring
Various subjects, principally by directed study, discussion and research.			
Art 695 696	Research	Credits Arr.	Fall
		Credits Arr.	Spring
Art 697 698	Thesis	Credits Arr.	Fall
		Credits Arr.	Spring

BIOLOGICAL SCIENCES

Biol. 105 106	Fundamentals of Biology (3+3)	4 Credits	Fall
		4 Credits	Spring

Principles of living systems as illustrated in unicellular and multicellular organisms; mechanisms of growth, development, heredity and evolution; introduction to plant and animal kingdoms. An introductory course open to students in all curricula. *Prerequisite for Biol. 106: Biol. 105 or permission.*

Fall semester: Basic principles; structure and function of vertebrates and vascular plants.

Spring semester: Plant and animal kingdoms.

Biol. 201	Elements of Vertebrate Anatomy (2+3)	3 Credits	Fall
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Anatomy and histology of the vertebrate body with emphasis on humans and other mammals. *Prerequisites: Biol. 105, Chem. 104.*

Biol. 202	Elements of Vertebrate Physiology (2+3)	3 Credits	Spring
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Physiology and biochemistry of the vertebrate body with emphasis on humans and other mammals. *Prerequisites: Biol. 105, Chem. 104, and a course in anatomy.*

Biol. 208	Organic Evolution (2+0)	2 Credits	Spring
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Evidences, mechanisms, and directive forces. *Prerequisite: Biol. 105, 106. Offered alternate year; next offered 1967-68.*

Biol. 233	Morphology of Nonvascular Plants (2+3)	3 Credits	Fall
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Comparative study of the structure, reproduction, development, and phylogenetic relationships of the major groups of nonvascular plants. *Prerequisite: Biol. 105, 106. Offered alternate years; next offered 1968-69.*

Biol. 234	Morphology and Anatomy of	4 Credits	Spring
	Vascular Plants (3+3)		

Comparative study of morphology, developmental anatomy, phylogenetic trends and life histories of the major groups of vascular plants. *Prerequisite: Biol. 105, 106. Offered alternate years; next offered 1968-69.*

Biol. 302	Genetics (3+0)	3 Credits	Spring
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Principles of inheritance in plants and animals; the physico-chemical properties of genetic systems. *Prerequisite: Biol. 105, 106.*

Biol. 303	Principles of Ecology (3+0)	3 Credits	Spring
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Relationships between organisms and their environments. Communities, environmental factors affecting plants and animals, population structure, and reaction of organisms. Several all day field trips. *Prerequisite: Biol. 105, 106, or permission.*

Biol. 305 Invertebrate Zoology (3+3) 4 Credits Fall
 Structure, function, classification, evolution, and life histories of invertebrate animals. Several all day field trips. *Prerequisite: Biol. 105, 106.*

Biol. 307 Parasitology (2+3) 3 Credits Fall
 Classification, morphology, life history and ecology of parasites of animals. *Prerequisite: Biol. 105, 106. Offered alternate years; next 1967-68.*

Biol. 317 Comparative and Developmental (2+9) 5 Credits Fall
318 Anatomy of Vertebrates (3+6) 5 Credits Spring

Structure, development, and evolution of organs and organ systems of vertebrates, including histology. Laboratory studies of whole and sectioned embryos of amphioxus, frog, and chick; detailed anatomical studies of representative vertebrate types; and microscopic examinations of principle tissues and organs.

Fall semester: Comparative Anatomy.

Spring semester: Embryology and Histology.

Prerequisite: Biol. 105, 106 and Junior standing or a B grade in Biol. 105, 106.

Biol. 323 Mammalogy (2+3) 3 Credits Fall
 The mammals of the world — their origin, evolution, taxonomy, zoogeography, life history, and habits. *Prerequisite: Biol. 105, 106, and a course in anatomy or permission.*

Biol. 324 Ornithology (2+3) 3 Credits Spring
 Structure and adaption, habits, life history, distribution, and classification of birds. Early morning field trips. *Prerequisite: Biol. 105, 106, and a course in anatomy or permission.*

Biol. 326 Ichthyology (2+3) 3 Credits Fall
 Classification, evolution, anatomy, and special modifications of fishes. *Prerequisite: Biol. 105, 106, and a course in anatomy or permission.*

Biol. 331 Systematic Botany (2+6) 4 Credits Fall
 Identification, nomenclature, and classification of vascular plants emphasizing taxonomic principles, mechanism of variation, classical and newer methods of taxonomic research and characteristics of major plant families. Several all day field trips. *Prerequisite: Biol. 105, 106.*

Biol. 341 General Microbiology (2+6) 4 Credits Fall
342 4 Credits Spring

Morphology, physiology, and ecology of micro-organisms. Isolation, cultivation, and identification. Disease, sources and modes of infection, sterilization. Micro-organisms in food, soil, and water. Laboratory includes isolation and identification of representative groups of micro-organisms and experiments on their physiological and biochemical characteristics. *Prerequisites: Elementary Biology, Elementary Organic Chemistry, or by permission.*

Biol. 401 Medical Technology 30 Credits Fall
 Twelve-month medical technology internship at an affiliated hospital school, including work in clinical chemistry, hematology, microbiology, serology, parasitology, and histologic technique. *Prerequisite: Senior standing in medical technology curriculum with the prior two semesters having been in residence at the University of Alaska; acceptance by an affiliated school of medical technology.*

Biol. 413 Cell Physiology (2+3) 3 Credits Fall
 Physical and chemical properties of protoplasm; morphology and function of the cell in relation to the life of the organism. Major topics: Passive and active transport, photosynthesis, respiration, enzymes, metabolism. *Prerequisites: Chem. 101, 102, and Biol. 105, 106; Chem. 321 or 223 recommended.*

- Biol. 414 Comparative Physiology (3+3)** 4 Credits Spring
 Water, iron, and nitrogen balance; temperature regulation; and circulatory, muscle, hormone, and nervous systems in the various animal phyla. *Prerequisite:* Chem. 101, 102, and Biol. 105, 106; Chem. 223 or 321 and Biol. 413 recommended.
- Biol. 416 Plant Physiology (2+3)** 3 Credits Spring
 Metabolic processes in higher plants. *Prerequisite:* Chem. 101, 102; Biol. 105; Biol. 413 recommended. *Offered alternate years; next offered 1967-68.*
- Biol. 491 Seminar (Arrange)** Credits Arr. Fall
492 Credits Arr. Spring
- Topics in Biological Sciences.
- Biol. 493 Special Topics (Arrange)** Credits Arr. Fall
494 Credits Arr. Spring
- Special fields in Biological Sciences. *Prerequisite:* Senior standing or permission. *Offered as demand warrants.*
- Biol. 495 Research** Credits Arr. Fall
496 Credits Arr. Spring
- Guided investigation, either laboratory or field, for qualified Seniors. *Admission by arrangement.*
- Biol. 616 Principles and Methods of Taxonomy (2+3)** 3 Credits Spring
 Modern taxonomic ideas and their application to zoological and botanical problems. *Offered alternate years; next offered 1968-69.*
- Biol. 618 Biogeography (2+0)** 2 Credits Spring
 Spatial and temporal geography of plant and animal groups; emphasis on environmental and historical features and controlling present patterns of distribution. *Offered alternate years; next offered 1967-68.*
- Biol. 627 Physiological Ecology (2+3)** 3 Credits Fall
 Interaction between organisms and their environment with emphasis on the function of the organism as affected by physical stimuli such as light, heat, water, ions, and biotic stimuli such as competition. Each environmental factor is considered at the molecular, cellular, organismic, population, and community levels. *Offered alternate years; next offered 1968-69.*
- Biol. 637 Modern Evolutionary Theory (2+0)** 2 Credits Fall
 Contemporary ideas and problems of the mechanics of evolution. *Offered alternate years; next offered 1967-68.*
- Biol. 641 Microbial Physiology (1+6)** 3 Credits Fall
 Organism isolation; growth of cultures; fermentation; enzyme purification; amino acid metabolism and synthesis. *Prerequisites:* Biol. 341, 342. Chem. 452, or permission of the instructor. *Offered as demand warrants.*
- Biol. 652 Marine Ecology (3+0)** 3 Credits Spring
 The sea as a biological environment; organisms in the ocean; factors influencing the growth of organisms; nutrient cycles; productivity; food web and interdependence of organisms; several field trips may be required. *Prerequisites:* Biol. 105, 106, 303; Chem. 212, 322; Geol. 411, or permission of the instructor. *Offered alternate years; next offered 1968-69.*
- Biol. 691 Seminar** Credits Arr. Fall
692 Credits Arr. Spring
- Topics in Biological Sciences. *Offered as demand warrants.*

Biol. 693 Special Topics	Credits Arr.	Fall
694	Credits Arr.	Spring

Various subjects, including advanced studies in ecology, evolution, taxonomy, biogeography, physiology, animal behavior, etc. *Admission by arrangement.*

Biol. 695 Research	Credits Arr.	Fall
696	Credits Arr.	Spring

Investigation, either field or laboratory, of a problem of lesser scope than the thesis, or supplementary to the thesis. *Admission by arrangement.*

Biol. 697 Thesis	Credits Arr.	Fall
698	Credits Arr.	Spring

Admission by arrangement.

BUSINESS ADMINISTRATION

B.A. 323 Corporate Organization and Finance	3 Credits	Fall
Principles in organizing and capitalizing a modern American business. Legal formation of corporations, factors determining capital requirements; various methods used in providing corporate capital.		

B.A. 331 Business Law (3+0)	3 Credits	Fall
332	3 Credits	Spring

Survey of the legal aspects of business problems; basic principles, institutions, and administration of law.

Fall semester: Contracts, agency, employment, negotiable instruments, personal property sales.

Spring semester: Insurance, suretyship, partnerships, corporations, real property, trusts and wills, bankruptcy, torts and business crimes. *Prerequisite:* Third-year standing.

B.A. 343 Marketing (3+0)	3 Credits	Fall
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Fundamental problems; simulation exercises; interrelations of marketing with other business activities; conceptual and quantitative sciences in marketing. *Prerequisite:* Econ. 121-122.

B.A. 359 Regulation of Industry (3+0)	3 Credits	Fall or Spring
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Effects of government regulation, economic policy and executive policy on private and public enterprise.

B.A. 360 Production Management (3+0)	3 Credits	Spring
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Basic manufacturing management. Survey of models and representative problems including scheduling machine set-up, plant layout, capital budgeting and production control. *Prerequisite:* Junior standing.

B.A. 361 Industrial Relations (3+0)	3 Credits	Fall
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Personnel practice in industry; analysis of labor-management problems; methods and administrations of recruiting, selecting, training and compensating employees; labor laws and their applications. *Prerequisite:* B.A. 360.

B.A. 393 Special Topics	Credits Arr.	Fall
394	Credits Arr.	Spring

B.A. 422 Corporate Financial Problems (3+0)	3 Credits	Spring
Financial problems frequently confronting the modern U.S. Corporation and proposed solutions. Topics include earnings retention and dividend policy, expansion and combination, refinancing and recapitalization and treatment for financial failure.		

B.A. 423 Investment Management (3+0) 3 Credits Fall or Spring

Management securities, portfolios of individuals and institutions; basic security analysis; investment policies of banks, insurance companies, investment companies, and fiduciaries.

B.A. 424 Managerial Economics (3+0) 3 Credits Spring

Interpretation of economic data and applications of economic theory in business firms. Bridging the gap between theory and practice through empirical studies, cases and decision problems. Particular emphasis upon decision-making based heavily upon analysis of data developed from research. *Prerequisite: Econ. 324.*

B.A. 442 Marketing Institutions and Channels (3+0) 3 Credits Spring

Analysis of industry and firm operations as marketing institutions; evolution of distribution channels; and contemporary marketing problems.

B.A. 443 Marketing Theory and Analysis of Market Change (3+0) 3 Credits Fall or Spring

Factors influencing behavior of consumer and business units; behavior change. The construction and use of mathematical models in marketing; application of digital computers in marketing system analysis and control. *Prerequisite: B.A. 343, completion of behavioral science requirements, and statistics.*

B.A. 462 Administrative Policy (3+0) 3 Credits Spring

Organization role in a dynamic society; decision problems in varying social, economic and political environments.

B.A. 480 Organization Theory (3+0) 3 Credits Fall or Spring

Literature or organizational theory; emphasis on theoretical concepts, social science research techniques and organizational behavior. *Prerequisite: Upper Division standing, completion of behavioral science requirements, or permission of instructor.*

B.A. 493 Special Topics Credits Arr. Fall
494 Credits Arr. Spring

B.A. 648 Mathematical Method and Computers Workshop (3+0) 3 Credits Fall or Spring

Selected topics in the use of mathematical models, econometric techniques and computers in marketing; individual research projects. *Prerequisite: permission of instructor.*

B.A. 690 Seminar in Finance (3+0) 3 Credits Spring

Survey of financial institutions and markets with emphasis upon theory and practice of central banking and actual operation of monetary policy. Current problems in finance. *Prerequisites: Post-Graduate or graduate standing. Approval of graduate student's advisory committee, or the department head.*

B.A. 691 Seminar in Marketing (3+0) 3 Credits Fall

A survey of marketing institutions, systems, policies and practices. Review of marketing constituents in economic development, marketing theory and current problems. *Prerequisites: Post-graduate or graduate standing. Approval of graduate student's advisory committee, or the department head.*

B.A. 692 Seminar in Production (3+0) 3 Credits Fall or Spring

A survey of conceptual framework and selected mathematical models applicable in production management. A review of classical problems in simplex method, waiting line theory, monte carlo analysis, queuing theory. Selected current problems and topics. *Prerequisite: Post-graduate or graduate standing. Approval of graduate student's advisory committee, or the department head.*

B.A. 693 Special Topics Credits Arr. Fall
694 Credits Arr. Spring

B.A. 696 Orientation to Research (3+0) 3 Credits Spring

Review of statistical tools representative of the field quantitative analysis in business and economics. Survey of selected research methods in social sciences. Graduate topics in managerial economics, including advanced statistical methods, Bayesian statistics and their interpretation. Preparation and organization of the thesis. Current problems. *Prerequisite: Post-graduate or graduate standing. Approval of graduate student's advisory committee, or the department head. Normally taken the last semester prior to the thesis requirement.*

B.A. 697 Thesis Credits Arr. Fall
698 Credits Arr. Spring

CHEMICAL ENGINEERING

CH.E. 433 Applied Chemical Kinetics (3+0) 3 Credits Fall

Kinetics of various reactions. Prediction of course of reactions. *Prerequisite: Chem. 332, or 532, Ch. E. 477, 479 and 486.*

CH.E. 477 Unit Operations (3+0) 3 Credits Fall

Fundamental unit operations; principles of fluid film theory, flow of fluids, flow meters, heat transmission, evaporation, crushing grinding size separation, filtration, crystallization, vaporization, diffusion absorption, extraction, distillation, humidity, air conditioning, drying. *Prerequisite: Chem. 202, Math. 202, Phys. 212 and E.S. 346 or Chem. 331.*

CH.E. 479 Unit Operation Laboratory (0+3) 1 Credit Fall

Experiments on Unit operations. Concurrent: C. E. 477.

**CH.E. 486 Chemical Engineering
Thermodynamics (3+0)** 3 Credits Spring

Application of thermodynamics and principles of physical chemistry to physical and chemical equilibria encountered in Chemical Engineering processes. *Prerequisite: Chem. 332, Math. 310, E.S. 346 or Chem. 331, and Ch. E. 477 recommended.*

CH.E. 491 Seminar (1+0) 1 Credit Spring

Current Topics in Chemical Engineering.

Ch.E. 487 Advanced Unit Operations (3+0) 3 Credits Fall
488 3 Credits Spring

Advanced treatment of flow of fluids, flow of heat crystallization, diffusion, distillation, adsorption, fuels and combustion. *Prerequisite: Ch. E. 477.*

CH.E. 490 Unit Operations Laboratory (0+6) 2 Credits Spring

Experiments on unit operations. *Prerequisites: Ch. E. 486, Ch. E. 587, Ch. E. 588 and concurrent.*

CH.E. 493 Special Topics Credits Arranged Fall
494 Credits Arranged Spring

Subjects include chemical engineering thermodynamics, unit processes in organic synthesis, industrial chemistry, inorganic chemical technology, nuclear chemical catalysis. *Prerequisite: Appropriate for subject given.*

CHEMISTRY

Chem. 101 General Chemistry (3+3) 4 Credits Fall

**102 General Chemistry + Introductory
Qual. Analysis (3+3)** 4 Credits Spring

General chemistry and introductory qualitative analysis. *Fall semester:* General principles, chemistry of the non-metals. *Spring semester:* Chemistry of the metals, and qualitative analysis.

Chem. 103 Introductory Chemico—Physical Science 3 or 4 Credits Fall
(3+0) or (3+3)
104 3 or 4 Credits Spring

Descriptive course in Chemico-Physical Science. Either semester may be taken separately. One 3-hour laboratory period may be elected but must be concurrent with lecture program.

Chem. 201 General and Quantitative Chemistry (3+3½ Credits Fall
202 4 Credits Spring

Fall semester: Classical principles of chemistry, atomic structures and the periodic table, molecular structure, the states of matter. For students in engineering. *Prerequisite:* *Math. 102, E.S. 112, high school chemistry or Chem. 104, Chem. 101 recommended.*

Chem. 207 Problems in Chemistry (Arrange) 1 or 2 Credits Fall
208 1 or 2 Credits Spring

Supplementary work, problems or topics in chemistry, designed for those especially interested in chemistry. *Prerequisite or concurrent:* *Chem. 101 or 201.*

Chem. 212 Introductory Quantitative Analysis (2+6) 4 Credits Spring

General principles of chemical analysis; introduction to volumetric and gravimetric methods. Theory, problems, and laboratory. *Prerequisite:* *Chem. 102 or 202, Math. 102 or 104.*

Chem. 217 Elemental Qualitative Analysis (2+6) 4 Credits Fall

Qualitative Analysis including rarer elements. The theoretical basis of equilibria and its applications, etc., lectures, laboratories problems. *Prerequisite:* *Chem. 102 or Chem. 201, Math. 101 or 103 or equivalent.*

Chem. 223 Introductory Organic Chemistry (3+3) 4 Credits Fall

For students in curricula requiring a one-semester terminal course in Organic Chemistry. *Prerequisite:* *Chem. 102 or Chem. 202.*

Chem. 224 Introductory Biochemistry (2+3) 3 Credits Spring

For students in curricula requiring a one-semester terminal course in Biochemistry. *Prerequisite:* *Chem. 223 or Chem. 321.*

Chem. 321 Organic Chemistry (3+3) 4 Credits Fall
322 4 Credits Spring

Organic chemistry; preparation and properties of simple aliphatic and aromatic compounds. For Chemistry, Chemical Engineering, Premedical, Biochemistry, Science, etc. *Prerequisite:* *Chem. 102 or 202 for Chem. 321; Chem. 321 for Chem. 322.*

Chem. 331 Physical Chemistry (3+3) 4 or 5 Credits Fall
332 4 or 5 Credits Spring

Fall semester: Three states of matter, principles of heat and thermo-dynamics and applications; solutions, colloids.

Spring semester: Thermochemistry, second and third laws of thermodynamics, equilibria, chemical kinetics, electrical phenomena, atomic structure, molecular structure, photo-chemistry. *Prerequisite:* *For Chem. 331, Chem. 202 or 212, Math. 102, Phys. 104 or 212. For Chem. 332, Chem. 331.*

Chem. 401 Inorganic Chemistry (3+0) or (3+3) 3 or 4 Credits Fall
402 3 or 4 Credits Spring

Systematic presentation of inorganic chemistry emphasizing properties of various families of the periodic system. *Prerequisite:* *Chem. 102 or Chem. 202 with grade of C or better. Offered as demand warrants.*

Chem. 416 Chemical Analysis (1+6) 3 Credits Spring
 Analysis of mixtures illustrating principles of chemical separations, potentiometric and conductometric titrations; colorimetric methods; chromatographic methods; organic reagents for metals and their use in trace analysis. *Prerequisite: Chem. 212 or 202 with permission.*

Chem. 425 Organic Qualitative Analysis (1+6) 3 Credits Fall
 Identification of pure organic compounds and mixtures. *Prerequisite: Chem. 222. Offered as demand warrants.*

Chem. 451 General Biochemistry (3+3) 4 Credits Fall
452 4 Credits Spring
 General principles of biochemistry. Chemistry and metabolism of carbohydrates, lipids, and proteins together with a consideration of enzymes, vitamins, hormones and other biocatalysts; chemistry and physiology of living tissues, blood and urine. *Prerequisite: Chem. 321 (but not concurrent), Chem. 212 with Chem. 331 recommended.*

Chem. 486 Chemical Thermodynamics (3+3) 3 Credits Spring
 Classical thermodynamics as applied to chemistry with brief introduction to statistical thermodynamics. *Prerequisite: Chem. 332 or E.S. 346, Math. 302.*

Chem. 491 Seminar (1+0) 0 or 1 Credit Fall
492 0 or 1 Credit Spring
 Discussion of current literature.

Chem. 493 Special Topics Credits Arrange Fall
494 Credits Arranged Spring
 Various subjects studied including advanced organic chemistry, advanced physical chemistry, advanced analytical chemistry, history and literature of chemistry, industrial chemistry, instrumental analysis, chemistry of radioactivity and isotopes, petroleum chemistry spectroscopy. *Prerequisite: At least junior standing and three semesters (or 12 credits) of college chemistry with grade of C or better.*

Chem. 495 Research Credits Arrange Fall
496 Credits Arranged Spring
 Introduction to research at the undergraduate level. Admission is by arrangement with an individual faculty member and with the approval of the Department Head.

Chem. 601 Inorganic Chemistry (3+0) 3 Credits Fall
602 3 Credits Spring
 Techniques of study in inorganic chemistry. Periodic relationships among the elements, theories of valence, complex inorganic compounds, chemistry of typical elements and groups of elements. *Offered as demand warrants.*

Chem. 609 Advanced Chemistry (3+3) 3 or 4 Credits Fall
610 3 or 4 Credits Spring
First semester: Intensive review of general chemistry, classical and modern atomic theory, applications to periodic classification; modern theories of valence, molecular structure, etc.; kinetic molecular theory change of state, theory of solutions, etc., chemical reactivity and its interpretations; energy of chemical reactions, cells oxidation-reduction actions, reaction velocity, ionic reactions.
Second semester: Applications of theory and principles to typical groups of elements, acidbase theory, complex ions, radio-chemistry. Organic chemistry and biochemistry (8 weeks) emphasizing structure determination and structural formulae with some treatment of systematic nomenclature, synthesis and biochemical processes. Laboratory work (optional) will include experiments on special techniques, qualitative and quantitative analysis, organic and biochemical preparations and qualitative tests. *Prerequisite: One year or equivalent of general chemistry. Offered as demand warrants.*

Chem. 611	Analytical Chemistry (1+6)	3 Credits	Fall
612		3 Credits	Spring

Emphasis on the theoretical interpretation of structure and reactions. One year of analytical chemistry. *Offered as demand warrants.*

Chem. 621	Organic Chemistry (3+0)	3 Credits	Fall
622		3 Credits	Spring

Emphasis on the theoretical interpretation of structure and reactions. *Prerequisite: One year of organic chemistry. Offered in alternative years; next offered in 1968-69.*

Chem. 631	Physical Chemistry (3+0)	3 Credits	Fall
632		3 Credits	Spring

Fundamental physico-chemical principles with special emphasis on thermodynamics and chemical kinetics. *Prerequisite: One year course in undergraduate physical chemistry. Offered as demand warrants.*

Chem. 647	The Nature of the Chemical Bond (3+0)	Credits Arranged	Fall
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Electronic structure of molecules and its correlation with the chemical and physical properties of substances, non-mathematical.

Chem. 648	Quantum Mechanics with Chemical Applications (3+0)	Credits Arranged	Spring
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Quantitative introduction to quantum mechanics. Theoretical and experimental aspects of the electronic wave functions of molecules.

Chem. 651	Selected Topics in Biochemistry (2+0)	2 Credits	Fall
652		2 Credits	Spring

Topic areas: vitamins and hormones, carbohydrates, physical biochemistry, nucleic acids, lipids, enzymes, protein chemistry; intermediary metabolism, oxidate enzyme systems, pathways of metabolism, biochemistry of the cell nucleus, etc. *Prerequisite: One year of biochemistry or one year of organic chemistry or permission.*

Chem. 661	Chemical Oceanography I (3+0)	3 Credits	Fall or Spring
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Chemical composition and properties of sea water; evaluation of salinity; pH, excess base, and carbon dioxide system; interface reactions; dissolved gases; organic components and trace inorganic components. *Prerequisites: Chem. 212, 322 and 332, or permission of the instructor.*

Chem. 663	Chemical Oceanography II (3+0)	3 Credits	Fall or Spring
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Selected topics in chemical oceanography, including stable isotope chemistry; chemical equilibria; chemistry of marine biota and their products; interaction of sediments and water; material exchange through sea air interface; marine photosynthesis and special topics of marine biochemistry; chemical technology as applied to oceanography; raw materials and industrial utilization. *Chemical Oceanography I, or permission of the instructor. Course offered on alternate years.*

Chem. 665	Cellular Biochemistry (3+0)	3 Credits	Fall or Spring
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Heterotrophic metabolism; autotrophic processes; control mechanisms, including enzymes and mechanism of reaction control; cellular nutrition including growth kinetics. *Prerequisites: Chem. 462 or equivalent. Course offered on alternate years.*

Chem. 691	Seminar (1+0)	1 Credit	Fall
692		1 Credit	Spring

Reviews of current research.

Chem. 693	Special Topics	Credits Arranged	Fall
694		Credits Arranged	Spring

Various subjects, including kinetics thermodynamics, statistical mechanics, photochemistry, colloid chemistry, nuclear chemistry, etc.

**Chem. 695 Research
696**Credits Arranged Fall
Credits Arranged Spring

Research which is not directly connected with thesis work. Admission is by arrangement with an individual faculty member and with the approval of the Department Head.

**Chem. 697 Thesis
698**Credits Arranged Fall
Credits Arranged Spring**CIVIL ENGINEERING****C.E. 116 Mapping (2+3)**

3 Credits Spring

Maps and scales, projections, U.S. Public Land System, aerial photos with special applications to forestry and wildlife management, plane tables, compasses, stadia, levels, transits, traverses. Intended primarily for students in Wildlife Management. *Prerequisite: Junior standing or permission of instructor. Offered in alternate years, 1967, 1969, 1971.*

C.E. 334 Properties of Materials (1+6)

3 Credits Spring

Properties, manufacture and testing of engineering materials. Design of concrete mixes. *Prerequisite: E.S. 331.*

C.E. 344 Hydrology (2+0)

2 Credits Spring

Relationship between precipitation and runoff. Infiltration, evaporation, aufeis, permafrost. Flood hydrographs and unit hydrographs. Flood routing. Statistical analyses. *Prerequisite: E.S. 341.*

C.E. 402 Transportation Engineering (2+0)

2 Credits Spring

Administration, economics, location, design, construction and maintenance of highways, railways, airports and other transportation facilities. *Prerequisite: C.E. 344.*

C.E. 412 Elements of Photogrammetry (2+3)

3 Credits Spring

Elementary study of aerial and terrestrial photographs as applied to surveying and mapping. *Prerequisite: E.S. 207.*

C.E. 415—Surveying (1+6)

3 Credits Fall

Traverses, curves, field astronomy, state coordinate systems, adjustments. *Prerequisite: E.S. 207.*

C.E. 422 Foundation Engineering (2+0)

2 Credits Spring

Principles of foundation action. Spread footings, mats, pile foundations, retaining walls and bulkheads, bridge piers, cofferdams and abutments. *Prerequisite: C.E. 435.*

C.E. 431 Structural Analysis (3+3)

4 Credits Spring

Statically determinate structures. Loadings. Graphical and analytical solutions for stresses and deflections. Indeterminate frames. Influence lines. *Prerequisite: E.S. 331.*

C.E. 432 Structural Design (3+3)

4 Credits Spring

Planning of structural systems, detail connections. Reinforced concrete. Introduction to ultimate load theory. Prestressing. Composite action. *Prerequisite C.E. 431.*

C.E. 435 Soil Mechanics (2+3)

3 Credits Fall

Identification, description, and physical properties of soils. Subsurface exploration, frost action. Entire soil mass surveyed for effect on substructure design. *Prerequisite: E.S. 311.*

C.E. 441 Sanitary Engineering (2+3) 3 Credits Fall

Sources of water supply. Design of works for the conservation, collection, treatment and distribution of water for domestic and industrial use and waste water disposal. Arctic water supplies. *Prerequisite: C.E. 344.*

C.E. 491 Seminar Credits Arr. Fall or Spring

C.E. 493 Special Topics Credits Arranged Fall
494 Credits Arranged Spring

C.E. 499 Advanced Engineering Problems (1+0) 2 Credits Fall
 or (2+0)

General problems drawn from science and engineering. This course is preparation for registration in Professional-Engineer-in-Training.

C.E. 603 Arctic Engineering (3+0) 3 Credits Fall

Application of engineering fundamentals or problems of advancing civilization in Polar regions. Logistics, foundations on frozen ground and ice, thermal aspects of structures and materials; transport and communications; heating and ventilating.

C.E. 620 Civil Engineering Construction (3+0) 3 Credits Fall

Construction equipment and methods, construction management and accounting, construction estimates and costs. *Prerequisite: E.S. 450 or equivalent and graduate standing.*

C.E. 631 Advanced Structural Analysis (3+0) 3 Credits Fall

Continuation of C.E. 431. Continuity in structure. Elastic and plastic theories. Arches and shells. Tall frames. *Prerequisite: C.E. 431.*

C.E. 632 Advanced Structural Design (2+3) 3 Credits Spring

Design of complex structures and frames. Live, dead, and earthquake loadings. Structural joints, columns, connectors, ties and struts. Application of modern materials and techniques to design. *Prerequisite: C.E. 631.*

C.E. 644 Hydraulic Engineering (2+3) 3 Credits Spring

Study and design of hydraulic power projects, structures, and machines; reclamation and drainage; canals and reservoirs. *Prerequisite: E.S. 341.*

C.E. 645 Advanced Sanitary Engineering (3+0) 3 Credits Fall
646 3 Credits Spring

Continuation of C.E. 441; emphasizes Polar problems involving water supply, sanitation, waste disposal, water and air pollution abatement.

C.E. 649 City and Regional Planning (3+0) 3 Credits Fall or Spring

Elements of city and regional planning for engineers. Demography, land use, physical planning techniques.

C.E. 691 Graduate Seminar (1+0) 1 Credit Fall
692 1 Credit Spring

Reports and papers on engineering topics. Practice in public speaking.
Prerequisite: Permission of instructor.

C.E. 693 Special Topics Credits Arranged Fall
694 Credits Arranged Spring

Various subjects. *Prerequisite: Permission of Instructor.*

C.E. 697 Thesis Credits Arranged Fall
698 Credits Arranged Spring

Individual study or research for students of special aptitude.

ECONOMICS

- Econ. 121 Principles of Economics I (3+0)** 3 Credits Fall
Introduction to economics; analysis and theory of national income; money and banking; public finance and taxation; economic systems.
- Econ. 122 Principles of Economics II (3+0)** 3 Credits Spring
Theory of prices and markets; income distribution; contemporary problems of labor, agriculture, public utilities, international economic relations.
- Econ. 193 Special Topics** Credits Arranged Fall
194 Credits Arranged Spring
- Econ. 232 Economic History of the United States (3+0)** 3 Credits Spring
History of the U.S. economy with special emphasis on the process of economic growth.
- Econ. 293 Special Topics** Credits Arranged Fall
294 Credits Arranged Spring
- Econ. 321 Price and Allocation Theory (3+0)** 3 Credits Fall
Analysis of demand and supply under various market forms; cost and theory of production; factor pricing and theory of distribution; survey of welfare economics. *Prerequisite: Econ. 121, Econ. 122.*
- Econ. 324 Income and Employment (3+0)** 3 Credits Spring
Concepts of income; underconsumption and underinvestment theories; theory of economic maturity; implications of full employment and full investment. *Prerequisite: Econ. 121, Econ. 122, Econ. 350 or Econ. 429.*
- Econ. 337 Economic Development (3+0)** 3 Credits Fall or Spring
Theories of growth and development; problems of economic development illustrated with case studies analysis of major policy issues. *Prerequisite: Econ. 121, Econ. 122 and three additional hours of economics or other social sciences. Offered as demand warrants.*
- Econ. 350 Financial and Monetary Theory and Policy (3+0)** 3 Credits Spring
Sources and uses of money and credit in modern society; regulation of money and credit and their impact on the economic welfare of the United States.
- Econ. 351 Public Finance and Taxation (3+0)** 3 Credits Fall or Spring
Government taxation, borrowing and spending; economic effects of taxation; influence of fiscal policy on economic activity. *Prerequisite: Econ. 121. Offered in alternate years.*
- Econ. 393 Special Topics** Credits Arranged Fall
394 Credits Arranged Spring
- Econ. 420 Labor Economics (3+0)** 3 Credits Spring
Labor market analysis: employment and unemployment, wage rates, structure and composition of the labor force; economic aspects of unionism, labor legislation, social insurance.
- Econ. 423 Comparative Economics (3+0)** 3 Credits Fall
Contrasts structure, institutions, and dynamics of selected private enterprise, collectivist, and underdeveloped economies.

Econ. 425 History of Economic Thought (3+0) 3 Credits Fall or Spring

Economic thought from the physiocrats to the present, classical and neoclassical theory, exponents and critics; contemporary development in economic theory. *Prerequisite: Econ. 121, Econ. 122 and three credits of upper division courses in economic or other social sciences. Offered as demand warrants.*

Econ. 429 Business Fluctuations (3+0) 3 Credits Fall

Analysis of fluctuations in economic activity; theories of business fluctuation; methods of control and forecasting. *Prerequisite: Econ. 121, Econ. 122.*

Econ. 435 Economics of Resources (3+0) 3 Credits Fall

Concepts of resources; interaction among resources, industrialization and economic development; theories and problems of conservation; emphasis on Alaska. *Prerequisite: Econ. 121, Econ. 122 or permission.*

Econ. 463 International Economics (3+0) 3 Credits Fall

Theories of international trade; international payments and the balance of payments; public and private control of trade international economic cooperation. *Prerequisite: Econ. 121, Econ. 122.*

Econ. 493 Special Topics Credits Arranged Fall
494 Credits Arranged Spring

Econ. 693 Special Topics Credits Arranged Fall
694 Credits Arranged Spring

EDUCATION

Ed. 301 Social Studies for Elementary Teachers (3+0) 3 Credits Fall

Methods and materials adaptable to modern curriculum in elementary social studies. *Prerequisite: Ed. 313 and prerequisites thereto.*

Ed. 302 Language Arts for Elementary Teachers (3+0) 3 Credits Spring

Definition; role of language in children's learning; specific language skills to be taught in grades 1 through 8; methods and materials for effective teaching; organization for instruction; all aspects of the language arts, except reading. *Prerequisite: Ed. 313 and prerequisites thereto.*

Ed. 304 Literature for Children (3+0) 3 Credits Spring

Criteria for evaluating children's books and application of criteria to books selected by student; history of children's literature; study of outstanding authors, illustrators and content of specific categories of literature; book selection aids and effective use of literature to promote learning. *Prerequisite: Psy. 305 or permission of instructor.*

Ed. 306 Teaching of Science in Elementary Schools (3+0) 3 Credits Fall

Modern concepts, methods and materials of teaching science. *Prerequisite: Ed. 313 and prerequisites thereto.*

Ed. 307 Teaching of Arithmetic (2+0) 2 Credits Spring

Present day concepts, methods and materials. *Prerequisite: Math. 115 or Math. 121, Math. 205, and Ed. 313 and prerequisites thereto. In-Service teachers may substitute Math. 345 for the math. prerequisites.*

Ed. 308 Physical Education for the Elementary School (2+3) 3 Credits Spring

(Same as P.E. 308)

Philosophy, source materials, games, rhythmic, group activities and program planning; participation required to gain skills and techniques of teaching activities for elementary grade children. *Prerequisite: Ed. 313 and prerequisites thereto.*

Ed. 311 Audio Visual Methods and Materials (3+2) 3 Credits Spring

Selection and use of audio visual materials in teaching and learning at all levels of education. *Prerequisite: Ed. 313 and prerequisites thereto.*

Ed. 313 Educational Psychology (3+0) 3 Credits Fall & Spring

Application of principles of psychology to classroom teaching and learning. *Prerequisite: Psy. 101 and Psy. 305 or Psy. 252.*

Ed. 323 Small Schools (2+0) 2 Credits As demand warrants

Basic for students planning to teach in small schools; special problems in organization and methods; small schools in Alaska serve as the focal point for discussion and instruction. *Prerequisite: Ed. 313 and prerequisites thereto.*

Ed. 332 Tests and Measurements (3+0) 3 Credits Fall & Spring

Theory and practice of educational evaluation; emphasis on testing aspects most applicable for classroom teachers; construction of teacher-made tests; interpretation of teacher-made and standardized instruments emphasized. Not open to students having credit in Psy. 321. *Prerequisite: Ed. 313 and prerequisites thereto.*

Ed. 345 Sociology of Education (3+0) 3 Credits Fall
(Same as Soc. 345)

Impact of culture on schools. Examination of contemporary social trends and relationships among church, school, government and family. *Prerequisite: Soc. 101.*

Ed. 348 History of Education in the United States (3+0) 3 Credits Spring

Development of American Education as a facet of social and intellectual history. *Prerequisite: Hist. 131 and 132.*

Ed. 402 Methods of Teaching (3+0) 3 Credits Fall & Spring

Principles and methods of teaching management, routine, daily programs, etc. *Prerequisite: 100 collegiate credits, Ed. 332 and prerequisites thereto.*

Ed. 405 Methods of Teaching Music (3+0) 3 Credits As demand warrants
(Same as Music 405)

Methods and problems of teaching music in junior and senior high schools, with emphasis on the general music program. *Prerequisite: 100 collegiate credits, Ed. 332 and prerequisites thereto, and Music 232, or consent of the instructor.*

Ed. 406 Methods of Teaching Physical Education (3+0) 3 Credits As demand warrants

Selection of materials and presentation methods for secondary school physical education. *Prerequisite: 100 collegiate credits, Ed. 332 and prerequisites thereto.*

Ed. 407 Methods of Teaching Home Economics (3+0) 3 Credits As demand warrants

Problems and methods in selecting and organizing materials for instruction; comparison and evaluation of methods, laboratory techniques, supplies, equipment; economy of time and materials. Admission by arrangement. *Prerequisite: 100 collegiate credits, Ed. 332 and prerequisites thereto.*

Ed. 408 Methods of Teaching Business Education (3+0) 3 Credits As demand warrants

Organization and content of high school business education courses; equipping a business education department, including selection, care and maintenance; methods in teaching bookkeeping, typewriting, shorthand and transcription. Admission by arrangement. *Prerequisite: 100 collegiate credits, Ed. 332 and prerequisites thereto.*

Ed. 409 The Teaching of Reading (3+0) 3 Credits Fall

Importance and nature of reading. Specific steps involved in the teaching of reading, word analysis, comprehension, interpretation, reading rate; new developments in reading instruction emphasizing appropriate materials. *Prerequisite: Ed. 313 and prerequisites thereto.*

Ed. 421 Secondary Education (3+0) 3 Credits Fall

Development of a working concept of secondary education in the U.S., its history, objectives, curriculum, organization, practices and consideration of current issues. *Prerequisite: Ed. 313 and prerequisites thereto.*

Ed. 422 Philosophy of Education (3+0) 3 Credits Fall

Basic philosophic concepts and their historical development; philosophy applied to education and related issues and problems; examinations of contributions of outstanding educators. *Prerequisite: Phil. 101.*

Ed. 426 Principles and Practices of Guidance (3+0) 3 Credits Fall

Introduction to the philosophies, organization, patterns and tools and techniques that aid teachers and guidance personnel in preparing students for responsible decision making in modern society. *Prerequisite: Ed. 332 and prerequisites thereto.*

Ed. 446 Public School Organization, Control, and Support (3+0) 3 Credits As demand warrants

Fundamentals of public school organization, control and support. Relation of Federal, State, and local agencies. Problems incident to public school organization, control, and support in Alaska. *Prerequisite: Senior standing in education. Not open to students who took Ed. 442/542 before it was abolished.*

Ed. 452 Student Teaching (0+18) 6 Credits Fall & Spring

Supervised teaching in elementary or secondary schools of Fairbanks or in a school approved by the Department of Education. The Department may limit registration, determine assignments, prescribe the number of teaching hours required and cancel the registration of students doing unsatisfactory work. *Prerequisite: See page 79 for requirements for admission to student teaching. May be taken concurrently with Ed. 402.*

Ed. 461 Research Credits Arr. As demand warrants

On approval of the Head of the Education Department, fourth year students who show outstanding ability for individual study in education may undertake research during their final year.

Ed. 491 Seminar Credits Arr. As demand warrants

492 Credits Arr. As demand warrants

Current topics in Education. Admission by permission of Head of the Department.

**Ed. 493 Special Topics Credits Arr. Fall
494 Credits Arr. Spring**

Various subjects; principally directed study, discussion and research.

Ed. 604 Diagnosis and Correction of Reading Deficiencies (3+0) 3 Credits As demand warrants

Nature of the reading process; emphasis on psychology involved in teaching reading difficulties; testing programs to ascertain specific disabilities in readiness, vocabulary, word-attack, comprehension, speed and accuracy; specific suggestions for their correction; newer approaches to teaching reading. *Prerequisite: Ed. 409 plus experience in the teaching of reading.*

Ed. 608 The Improvement of Elementary Teaching (3+0)

3 Credits As demand warrants

Emphasis on improvement of elementary teaching; a re-evaluation of teaching practices; relating of principles of learning, instructional procedures, and recent developments in education to situations made meaningful through the student's teaching experience. *Prerequisite: Graduate standing in education and elementary teaching experience.*

Ed. 620 Curriculum Development (3+0)

3 Credits As demand warrants

Basic definition of curriculum. Present need for curriculum improvement. Criteria for selection of broad goals. Types of curriculum framework examined. Consideration of the organization of specific learning experiences as part of the curriculum structure. *Prerequisite: Ed. 313 and graduate standing in education.*

Ed. 623 Principles of Individual Counseling (3+0)

3 Credits As demand warrants

Counseling techniques and procedures in education, social work, and on a limited basis, clinical psychology; their applications by the classroom teacher and guidance specialist in assisting students with adjustment problems within a normal range. *Prerequisite: Ed. 426, Psy. 304 or 406 and permission of instructor.*

Ed. 624 Group Counseling (3+0)

3 Credits As demand warrants

Kinds and types of groups with emphasis on methods, problems and needed skills in working with groups in a counseling situation. *Prerequisite: Ed. 426 and 623.*

Ed. 627 Education Research (3+0)

3 Credits

Fall

Techniques on education research; selection of topics and problems, data gathering, interpretation and preparation of reports. *Prerequisite: Graduate standing in education.*

Ed. 628 Analysis of the Individual (3+0)

3 Credits As demand warrants

Means of acquiring data pertinent to the individual. Interpreting data and formulating case reports conducive to greater understanding. *Prerequisite: Ed. 426.*

Ed. 629 Individual Tests of Intelligence (2+0)

2 Credits As demand warrants

Individual intelligence tests with emphasis on the revised Stanford-Binet Intelligence Scale and the Wechsler Intelligence Scales. *Prerequisite: Ed. 332 and permission of instructor.*

Ed. 630 Laboratory in Individual Tests of Intelligence (0+6)

2 Credits As demand warrants

Provides laboratory experience in administration of the Revised Stanford-Binet Intelligence Scale or the Wechsler Intelligence Scales. *Prerequisite: Ed. 629 and permission of instructor.*

Ed. 631 Advanced Educational Psychology: Developmental (3+0)

3 Credits As demand warrants

Stresses understanding of human emotional, mental, physical, and social development. Emphasis on individual differences. Assumes one previous course in human development, educational psychology, and teaching experience. *Prerequisite: Graduate standing.*

Ed. 632 Occupational Information (3+0)

3 Credits As demand warrants

Principles and practices of vocational guidance. Explains process of choosing a vocation, theories of vocational choice, sources and dissemination of occupational information. *Prerequisite: Graduate standing, Ed. 426, and permission of instructor.*

Ed. 633 Organization, Administration and Supervision of Guidance (2+0)

2 Credits As demand warrants

For administrators, guidance personnel and others interested in developing or evaluating a guidance program; selection procedures and supervision of guidance personnel are considered. *Prerequisite: Ed. 426.*

Ed. 634 Counseling Practicum (1+4) 3 Credits Arr.

Provides supervised field experience, including preparatory activities in an educational setting. *Prerequisite: Approval of Head of Education Department; Ed. 426, Ed. 623, Psy. 304 or 406, Psy. 321.*

Ed. 636 Advanced Public School Administration: Cases and Concepts (2+0) 2 Credits As demand warrants

Case study approach to public school administration; identification and analysis of basic issues and problems; identification of pertinent data and possible solutions. *Prerequisite: First course in public school administration.*

Ed. 637 Public School Administration (3+0) 3 Credits As demand warrants

Responsibility pertaining to the organization of a school and the direction of personnel. Functions of instructional leadership. Public school administration as a career. Problems incident to public school administration in Alaska. *Prerequisite: Ed. 446 and graduate standing in Education.*

Ed. 638 Supervision and Improvement of Instruction (3+0) 3 Credits As demand warrants

Development, purpose, organization of supervisory programs; special attention to current in-service education programs.

Ed. 639 Public School Finance (3+0) 3 Credits As demand warrants

Contemporary basis for raising and distributing Federal, State and Local education funds; problems of school financing in Alaska. Open only to advanced students in education.

Ed. 641 School Law (2+0) 2 Credits As demand warrants

Rights and responsibilities of teachers and pupils; rulings of the Attorney General; decisions of the courts, regulations of the State Board of Education. *Prerequisite: Graduate standing in education.*

Ed. 691 Education Seminar Credits Arr.
692 As demand warrants
Credits Arr.
As demand warrants

Current topics in education. Maximum credit allowed toward advanced degrees: 4 credits. *Admission by arrangement.*

Ed. 693 Special Topics Credits Arr. Fall
694 Credits Arr. Spring

Various subjects, principally by directed study, discussion and research. *Admission by arrangement. Prerequisite: Ed. 627 when taken as independent project in lieu of thesis.*

Ed. 695 Research Education Credits Arr. Fall
696 Credits Arr. Spring

Independent project in lieu of theses. *Admission by arrangement. Prerequisite: Ed. 627.*

Ed. 697 Thesis Credits Arr. Fall
698 Credits Arr. Spring

Offered as demand warrants. *Prerequisite: Ed. 627.*

ELECTRICAL ENGINEERING

E.E. 102 Electrical Engineering Shop Practice (0+6) 2 Credits Spring

Essentials of metal-working, use of hand and machine tools; chassis construction; wiring and soldering; construction of electronic equipment. Enrollment limited. *Prerequisite: Registration in electrical engineering or consent of the instructor.*

E.E. 203	Electrical Engineering Fundamentals (3+3)	4 Credits	Fall
204		4 Credits	Spring

Analysis of Alternating-current circuits using complex notation and phasor diagrams; resonance; transformers; Fourier analysis; the complex frequency plane; three-phase circuits. *Prerequisite: Math. 200.*

E.E. 313	Elements of Electrical Engineering (2+3)	3 Credits	Fall
314		3 Credits	Spring

Primarily for students of Civil, Mining, Mechanical and Chemical Engineering. Circuits, machines, electronics, instrumentation. *Prerequisite: Phys. 212.*

E.E. 333	Electronics (3+3)	4 Credits	Fall
334		4 Credits	Spring

Characterization of electronic devices including semiconductors and vacuum tubes. Theory and design of basic circuits including amplifiers, oscillators, rectifiers and detectors. *Prerequisite: E.E. 204. Offered in alternate years; next offered 1967-68.*

E.E. 403	Machines and Power (3+3)	4 Credits	Fall
404		4 Credits	Spring

Electrical machines, with introduction to power: D.C. and A.C. machines, including motors, generators, transformers, alternators, and selsyns; laboratory study of typical machine characteristics. *Prerequisite: E.E. 204. Offered in alternate years; next offered 1968-69.*

E.E. 432	Fields, Lines, and Antennas (3+3)	4 Credits	Spring
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Use of Maxwell's equations in the analysis of waveguides, cavity resonators, and transmission lines; retarded potentials; antennas for radio and microwave frequencies. *Prerequisite: Math. 302, Phys. 331. Offered in alternate years; next offered 1968-69.*

E.E. 435	Advances in Electronics (3+3)	4 Credits	Fall
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Additional topics in electronics to extend and broaden the student's background; new developments. *Prerequisite: E.E. 334. Offered in alternate years; next offered 1968-69.*

E.E. 442	Digital Computers (4+0)	4 Credits	Fall
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Design and functioning of digital computers; system organization, programming, computer arithmetic, combinational and sequential circuits, methods of control, electronic circuitry. *Prerequisite: Upper-division standing in electrical engineering, mathematics or physics, or consent of instructor. Offered in alternate years; next offered 1967-68.*

E.E. 453	Circuit Theory (4+0)	4 Credits	Fall
454		4 Credits	Spring

Transient analysis, Fourier Analysis, network theorems, transmission lines, filters; circuit analysis by the Laplace Transform; theory of servomechanisms. *Prerequisite: E.E. 204, credit or registration in Math 302. Offered in alternate years; next offered 1967-68.*

E.E. 462	Communication Systems (3+3)	4 Credits	Spring
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Theory and practice of communications systems; essentials of information theory; operation and maintenance of typical equipment. *Prerequisite: Credit or registration in E.E. 334 and E.E. 432.*

E.E. 471	Control (3+3)	4 Credits	Fall
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Theory and practice of automatic control systems. Characterization and stability of feedback systems. Root locus, Nyquist and Bode diagrams. Transducers. *Prerequisite: E.E. 204, 454. Offered in alternate years, next offered 1968-69.*

E.E. 484	Design of Electrical Systems (1+6)	3 Credits	Spring
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The design process; class will design a simple system with attention to capability, reliability, cost. *Prerequisite: Upper-division standing. Offered in alternate years; next offered 1967-68.*

E.E. 491 Seminar (1+0)	1 Credit	Fall
492	1 Credit	Spring

Current topics. Students will have an opportunity to present papers. *Prerequisite: Senior standing in electrical engineering.*

E.E. 493 Special Topics	Credits Arranged	Fall
494	Credits Arranged	Spring

Various subjects studied.

E.E. 693 Special Topics	Credits Arranged	Fall
694	Credits Arranged	Spring

ELECTRONICS TECHNOLOGY

E.T. 50 General Science of Modern Electronics	3-Credits	Fall
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A comprehensive treatment of the development of Electronics in our modern world. This course includes a study of: Power supplies, electron tubes, amplifiers, electron tube oscillators, transistors, servosystems, radio, radar, and sonar. Not open to students in Electronic Technology Programs.

E.T. 51 DC Circuits (5+12)	4 Credits	Fall
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The first course in electricity for electronics technicians. Basic physics, electrical terms and units, meters and their use, resistance, Ohm's law, simple circuits, magnetic fundamentals, batteries, Kirchoff's laws, DC circuit analysis, inductance, capacitance.

E.T. 52 DC Circuits (5+12)	4 Credits	Fall
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Principles of alternating current, vectors, phase relationships, inductive and capacitive reactance and impedance, AC circuit analysis, series and parallel resonant circuits, transformers, Thevenin's equivalent circuit.

E.T. 55 Electronics Practice I (0+12)	3 Credits	Fall
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Electronic drawings, soldering, electrical connections, use of hand tools, preparation for license examinations, layout and assembly of audio-frequency equipment, operation transmitters and receivers, troubleshooting, practical aspects of electronics.

E.T. 59 Mathematics for Electronics (5+3)	5 Credits	Fall
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Review of arithmetic. Selected topics in algebra, trigonometry, slide-rule, computation, graphs, analytical geometry, waveform analysis, decibel calculations. Applications to electronics. *Prerequisite: High school mathematics.*

E.T. 61 Tubes and Semiconductors	4 Credits	Spring
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Vacuum tubes, semiconductors, transistors. Fundamentals, construction, characteristics, parameters, specifications.

E.T. 62 Electronic Circuits I (8+15)	3 Credits	Spring
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Power supplies, basic amplifiers, loud speakers, microphones and pickups, basic oscillators.

E.T. 63 Electronic Systems I	4 Credits	Spring
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The radio transmitter, transmission, reception, and detection of radio waves; antennas and transmission lines; the radio receiver; special receiver circuits; frequency modulated transmitters and receivers; transistor applications; single-side and communications. *Prerequisites: E.T. 51, 52, 69.*

E.T. 66 Electronics Practice II (0+12)	3 Credits	Spring
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Layout and assembly of radio-frequency equipment, practical aspects of electronics, alignment and repair procedures, practical experience in electronics, use of test equipment, preparation for license examinations. *Prerequisite: E.T. 55.*

E.T. 71	Electronic Circuits II	5 Credits	Summer
72	Electronic Circuits III (10+15)	4 Credits	Summer
75	Microwave Electronics	4 Credits	Summer

Nonsinusoidal waveshapes, multivibrators, blocking and shock-excited oscillators, wave-shaping, circuits, limiters, clappers, counters, sweep-generator circuits, special power supplies, systems, transistor applications, television transmitters and receivers. Microwaves; microwave oscillators, transmitters, duplexers, antennas, amplifiers, mixers, receivers; multiplexing. *Prerequisite: E.T. 61, 62, 63.*

E.T. 77	System Maintenance (0+12)	4 Credits	Summer
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Principles and practice of system maintenance. Experience with a system, such as a transmitter or carrier communications systems, including work with system drawings, the logbook, routine maintenance, and repair of troubles. *Prerequisite: Registration or credit in E.T. 71, 72, 75.*

E.T. 83	Test Instruments (3+3)	3 Credits	Fall
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Use, theory, and limitations of electronic test instruments including multimeter, vacuum-tube voltmeter, oscilloscope, bridges, swept-frequency RF generator, digital voltmeter, counter. Procedures for VSWR, noise figure, gain, band width. *Prerequisite: E.T. 72, 75.*

E.T. 84	Electronic Systems II (5+3)	5 Credits	Fall
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Organization, functioning and maintenance of large electronic systems such as radars and computers. *Prerequisite: E.T. 72, 75.*

E.T. 91	Semiconductor Theory & Application	5 Credits	Spring
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Physics Review, semiconductors, physical action of transistors, the transistor as a circuit element, small signal amplifiers, power amplifiers, cascade amplifiers, bias equations and bias stability, feedback, noise, transistor oscillators and negative impedance devices, digital switching circuits, high frequency description of transistors, circuit aspects of field effect transistors.

ENGINEERING MANAGEMENT

E.M. 401	Construction Cost Estimating and Bid Preparation (3+0)	Credits Arranged	Fall
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Compilation and analysis of the many items that influence and contribute to the cost of projects to be constructed. Preparation of cost proposals and study of bidding procedures. May be offered for graduate credit.

E.M. 605	Advanced Engineering Economy (3+0)	3 Credits	Fall
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The science of fiscal decision making. Graduate level studies in problems of replacement, economic selections, income tax accounting, engineering evaluation and introduction to the problems of depreciation.

E.M. 611	Engineering Management (3+0)	3 Credits	Fall
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Review of accounting principles; industrial accounting including cost accounting; business organization; business finance; emphasis on use of data in management rather than its generation.

E.M. 612 Engineering Management (3+0) 3 Credits Spring

Development of ability to seek out needed information, analyze it, and make recommendations over a wide range of managerial problems involving fiscal matters; cases involving capital acquisitions, profit maximization, methods improvement, pricing, modification of controls, and other management problems. *Prerequisite: E.M. 611 and E.M. 605.*

E.M. 613 Engineering Management (3+0) 3 Credits Spring

Human element in management; labor relations, human relations, personnel administration, industrial psychology, employee relations, and labor economics from the viewpoint of needs of a manager.

ENGINEERING SCIENCES**E.S. 101 Graphics (0+6) 2 Credits Fall**
102 2 Credits Spring

Fall semester: Orthographic projection, pictorial drawing, sketching, lettering, geometric construction. Charts, graphs and diagrams.

Spring semester: Descriptive geometry; graphic solution of 3 dimensional problems.

E.S. 111 Engineering Science (2+3) 3 Credits Fall
112 3 Credits Spring

Engineering problem solving with emphasis on the statics, kinematics and dynamics of engineering systems. Conservation laws, fluid mechanics and heat. *Prerequisite: Credit or registration in Math. 106 (fall) and Math. 200 (spring).*

E.S. 207 Measurements (2+3) 3 Credits Fall

Theory of measurement, precision, dispersion, distribution of error; with practice problems taken from various fields of engineering. *Prerequisite: E.S. 112.*

E.S. 208 Mechanics (3+3) 4 Credits Spring

Statics, kinematics, dynamics. Both classical and vector methods are used. Graphical solutions, work and energy, impulse and momentum, virtual work. *Prerequisites: E.S. 112 and Math. 200.*

E.S. 331 Mechanics of Materials (2+3) 3 Credits Fall

Stress-strain relationships, shear and moment diagrams, design of beams, columns, rivet, bolt, and weld connections, indeterminate beams. *Prerequisites: E.S. 208, Math. 201.*

E.S. 341 Fluid Mechanics (3+3) 4 Credits Fall

Statics and dynamics of fluids. Basic equations of hydrodynamics, dimensional analysis, simple hydraulic machinery. *Prerequisite: E.S. 208, Math. 201.*

E.S. 346 Basic Thermodynamics (3+0) 3 Credits Spring

Systems, properties, processes and cycles. Fundamental principles of thermodynamics (first and second laws), elementary applications. *Prerequisite: Math. 202, Phys. 212.*

E.S. 450 Engineering Management and Operations (3+0) 3 Credits Spring

Fundamentals of Engineering Economy; contracts, specifications, legal and ethical principles, management. *Prerequisite: Senior standing or permission.*

E.S. 491 Engineering Seminar 492 Credits Arr. Fall or Spring
492 Credits Arr. Fall or Spring

Oral and written exposition on current engineering topics.

ENGLISH

Engl. 1 Elementary English (3+0) 0 Credits Fall or Spring

For students inadequately prepared for English 101. Intensive practice in writing and oral comprehension. Frequent writing assignments.

Engl. 3 Laboratory in Usage (1+2-4) 0 Credits Fall or Spring

Engl. 67 Elementary Exposition 3 Credits Fall
68 3 Credits Spring

Training in oral and written communication.

Engl. 101 Composition and Modes of Literature (3+0) 3 Credits Fall or Spring
102 3 Credits Fall or Spring

Intensive instruction in orderly thought, clear expression and analysis of creative literature.

Engl. 201 Masterpieces of World Literature (3+0) 3 Credits Spring
202 3 Credits Fall

Masterworks of literature, studied to acquire a broad background and develop standards of literary judgment. *Prerequisite: 101 and 102.*

Engl. 213 Advanced Exposition (1+2) 3 Credits Fall or Spring

Clarity and vigor in written communication of facts and ideas. Principles of style and methods of exposition. Students write for individual weekly conferences. *Prerequisite: Engl. 102.*

Engl. 239 Forms and Techniques of Poetry (3+0) 3 Credits Fall
 Devices, esthetic and criticism of verse composition. *Prerequisite: Engl. 101 and 102.*

Engl. 240 Form and Techniques of Fiction (3+0) 3 Credits Spring

Devices, esthetic and criticism of prose composition. *Prerequisite: Engl. 101 and 102.*
 EDITORS NOTE: EXCEPT WHERE OTHERWISE INDICATED, PREREQUISITES FOR 300 AND 400 LEVEL COURSES ARE ENGLISH 239 OR 240 OR INSTRUCTOR'S PERMISSION.

Engl. 314 Research Writing (3+0) 3 Credits Spring

Organizing reports, documenting research, language and style in scholarly articles. Papers in students' fields prepared for conference and class. *Prerequisite: Engl. 213 or by arrangement.*

Engl. 321 The Renaissance (3+0) 3 Credits Fall
 Poetry and prose of the sixteenth century. *Next offered 1968-69.*

Engl. 322 Neoclassical Age (3+0) 3 Credits Spring
 Poetry and prose from Samuel Butler through Samuel Johnson. Impact of intellectual, religious, and political controversies on the literature of the period. *Next offered in 1968-69.*

Engl. 323 Romantic Period (3+0) 3 Credits Fall
 Poetry and prose from the late 1700's to 1830. *Next offered 1967-68.*

Engl. 324 Victorian Period (3+0) 3 Credits Spring
 Poetry and non-fictional prose, 1830-1902. *Next offered 1967-68.*

- Engl. 328 19th Century American Prose (3+0) 3 Credits Fall**
The works of Emerson, Hawthorne, Melville, Adams, Twain, Howell and James. *Next offered 1968-69.*
- Engl. 336 20th Century American Prose (3+0) 1-3 Credits Fall or Spring**
The major fiction of Lewis, Fitzgerald, Hemingway, Faulkner, and Steinbeck.
- Engl. 337 20th Century American Poetry (3+0) 3 Credits Fall**
The poetry of Whitman, Dickinson, Robinson, Frost, Stevens, Roethke and others. *Next offered 1967-68.*
- Engl. 341 20th Century British Literature (3+0) 3 Credits Fall**
Major achievements of modern British poetry and prose. *Next offered 1967-68.*
- Engl. 342 20th Century Drama (3+0) 3 Credits Spring**
From Chekhov to Ionesco, the major dramatists and their achievements. *Next offered 1967-68.*
- Engl. 352 The British Novel to 1900 (3+0) 3 Credits Spring**
Origin and development of the novel with concentration on Richardson, Fielding, Austen, E. Bronte, Dickens, Conrad and Hardy. *Next offered 1967-68.*
- Engl. 413 Old and Middle English Literature (3+0) 3 Credits Spring**
Old English literature in translation; representative Middle English texts exclusive of Chaucer. *Next offered 1968-69.*
- Engl. 421 Chaucer 3 Credits Fall**
Chaucer's poetry, with emphasis on *The Canterbury Tales*.
- Engl. 423 Elizabethan Drama (3+0) 3 Credits Fall**
Major plays of Elizabethan dramatists and early plays of Shakespeare.
- Engl. 424 Shakespeare (3+0) 3 Credits Spring**
Major works, emphasis on the later plays and review of Shakespearian criticism.
- Engl. 431 Creative Writers Workshop (3+0) 1-3 Credits Fall**
432 1-3 Credits Spring
Writing fiction and poetry. Critique of student productions.
- Engl. 443 Greek and Roman Literature (3+0) 3 Credits Fall**
Greek and Roman literature in English translation. *Next offered 1967-68.*
- Engl. 444 European Literature (3+0) 3 Credits Fall or Spring**
Studies in major European writers and periods.
- Engl. 472 History of English Language (3+0) 3 Credits Spring**
Origin and development of the English language; modern syntax and usage.
- Engl. 493 Special Topics (3+0) 3 Credits Fall**
494 3 Credits Spring
Various subjects in American, British and Comparative Literature.
- Engl. 605 Studies in Drama (3+0) 3 Credits Fall**
- Engl. 610 Studies in Fiction (3+0) 3 Credits Spring**

Engl. 615	Studies in Poetry (3+0)	3 Credits	Fall
Engl. 620	Studies in Criticism (3+0)	3 Credits	Spring
Engl. 625	Studies in Middle English Literature (3+0)	3 Credits	Fall
Engl. 630	Studies in Literature of the English Renaissance (3+0)	3 Credits	Spring
Engl. 635	Studies in 17th Century English Literature (3+0)	3 Credits	Fall
Engl. 640	Studies in 18th Century English Literature Satire (3+0)	3 Credits	Spring
Engl. 645	Studies in the Literature of the British Romantic Period (3+0)	3 Credits	Fall
Engl. 650	Studies in the Literature of the Victorian Period (3+0)	3 Credits	Spring
Engl. 655	Studies in 20th Century British Literature (3+0)	3 Credits	Fall
Engl. 660	Studies in 20th Century American Literature (3+0)	3 Credits	Spring
Engl. 665	Studies in 19th Century American Literature (3+0)	3 Credits	Fall
Engl. 670	Studies in Comparative Literature (3+0)	3 Credits	Spring
Engl. 691	Seminar	Credits Arr.	Fall
692		Credits Arr.	Spring

Various Topics. Admission by arrangement.

Engl. 693	Special Topics	Credits Arr.	Fall
694	Special Topics	Credits Arr.	Spring
Engl. 695	Research	Credits Arr.	Fall
696		Credits Arr.	Spring
Engl. 697	Thesis	Credits Arr.	Fall
698		Credits Arr.	Spring

WRITER'S WORKSHOP

Engl. 675	Writing Drama	Credits Arr.	Fall or Spring
Engl. 681	Writing Fiction	Credits Arr.	Fall or Spring
Engl. 685	Writing Verse	Credits Arr.	Fall or Spring

FRENCH

Fren. 101	Elementary French (5+0)	5 Credits	Fall
102		5 Credits	Spring

Designed to teach students to hear, speak, read and write French. Oral practice is emphasized.

Fren. 150 Scientific French (3+0) 3 Credits Spring
 Rapid acquisition of a reading knowledge of scientific French. *Offered as demand warrants.*

Fren. 201 Intermediate French (3+0) 3 Credits Fall
202 3 Credits Spring

A continuation of French 102. Increasing emphasis on reading ability and cultural material. Conducted in French. *Prerequisite: French 102 or 2 years of high school French.*

Fren. 311 Survey of French Literature (3+0) 3 Credits Fall
312 3 Credits Spring

Representative masterpieces from the beginnings to the twentieth century. Lectures in French. *Prerequisite: French 202, or equivalent. Offered as demand warrants.*

Fren. 321 Studies in French Literature (3+0) 3 Credits Fall
322 3 Credits Spring

Choice of authors, genres, or periods of French literature for intensive study. *Prerequisite: French 202, or equivalent.* Students may repeat course for credit when topic varies.

Fren. 452 The French Novel of the 20th Century 3 Credits Spring
 Representative novelists and their works. *Offered as demand warrants.*

Fren. 493 Special Topics Credits Arr. Fall
494 Credits Arr. Spring

Various subjects for advanced students. Admission by arrangement. *Offered as demand warrants.*

Fren. 691 French Seminar Credits Arr.
692 As demand warrants
 Credits Arr.
 As demand warrants

Fren. 693 Special Topics Credits Arr. Fall
694 Credits Arr. Spring

Fren. 695 Research Credits Arr. Fall
696 Credits Arr. Spring

Fren. 697 Thesis Credits Arr. Fall
698 Credits Arr. Spring

GEOGRAPHY

Geog. 101 Introductory Geography (3+0) 3 Credits Fall
 World regions; an analysis of environment.

Geog. 201 Elements of Physical Geography (3+0) 3 Credits Fall
 Description of physical environment and introduction to techniques of geographic analysis. *Prerequisite: Geo. 101.*

Geog. 302 Geography of Alaska (3+0) 3 Credits Spring
 Regional geography of Alaska. *Prerequisite: Geography 201, or by permission.*

**Geog. 307 Physical Geography of Asiatic
Russia (3+0)****3 Credits****Fall or Spring**

A description and analysis of the resources, landforms, vegetation and climate of Asiatic Russia with emphasis on that part adjacent to Alaska. *Admission by arrangement.*

Geog. 309 Cartography (1+6)**3 Credits****Fall or Spring**

Graphic techniques for presenting geographic data through the construction of maps, projections and charts. *Admission by arrangement.*

Geog. 316 Pleistocene Environment (3+0)**3 Credits****Spring**

Principles of paleogeography and their application to the environments of late Ice Age and Post-glacial times. *Prerequisite: Geography 201 or by permission.*

Geog. 327 Cold Lands (3+0)**3 Credits****Fall**

Climate, natural resources and man's adjustment to environment in cold lands. *Prerequisite: Anth. 101, or by permission.*

Geog. 401 Weather and Climate (3+0)**3 Credits****Fall or Spring**

Introduction to the study of weather and the classification of climates. *Prerequisite: Geography 201.*

Geog. 402 Man and Nature (3+0)**3 Credits****Spring**

Detailed analysis of the interrelationships of man and environment with particular emphasis on the Arctic. *Admission by arrangement.*

**Geog. 491 Seminar
492****Credits Arr.****Fall****Credits Arr.****Spring**

Selected topics in Geography. *Admission by arrangement.*

**Geog. 493 Special Topics
494****Credits Arr.****Fall****Credits Arr.****Spring**

Various subjects studied. *Admission by arrangement.*

GEOLOGY**Geol. 101 General Geology (3+3)****4 Credits****Fall**

Introduction to physical geology; a study of the earth, its materials, and the processes that effect changes upon and within it. Laboratory training in the use of topographic maps and the recognition of common rocks and minerals.

Geol. 102 Historical Geology (3+3)**4 Credits****Spring**

Summary of the history of the earth from the earliest stages to the present; sequence of geologic events and succession of life forms. Laboratory work includes the reconstruction of geologic history of various regions through use of geologic maps and structure sections. *Prerequisite: Geol. 101*

Geol. 104 Elements of Geology (3+0)**3 Credits****Evening**

A non-laboratory introduction to physical and historical geology; the earth, its origin, processes that affect it, sequence of events in its evolution and succession of life on it; appreciation of the modern landscape. Not acceptable toward a degree in geology or fulfilling a laboratory science requirement.

Geol. 213 Mineralogy (3+6)**5 Credits****Fall**

Introduction to mineral chemistry, atomic structure, elementary crystallography, and descriptive and determinative mineralogy. Includes introduction to instrumental determinative techniques (x-ray, spectograph), simple qualitative chemical tests, and the theory and use of the petrographic microscope. May be taken for 4 credits by arrangement. *Prerequisites: Math. 106, 200. Chem. 101, 102.*

Geol. 214 Petrology (3+6) 5 Credits Spring

Mineralogy and chemical composition, genesis and identification of igneous, metamorphic and sedimentary rocks. Laboratory work is based on study of paired hand specimens and thin section. *Prerequisite: Geol. 213.*

Geol. 304 Geomorphology (2+3) 3 Credits Spring

Study of land forms and processes which create and modify them. Laboratory and field study of physiographic features. (Field trips.) *Prerequisite: Geol. 102.*

Geol. 314 Structural Geology (2+3) 3 Credits Spring

Origin and interpretation of primary and secondary geologic structures. Graphical solution of structural problems. (Field trips.) *Prerequisite: Geol. 101, recommended, Geol. 102, Phys. 103, or by arrangement.*

Geol. 321 Principles of Sedimentation (2+3) 3 Credits Fall

Sources of materials, sedimentary and diagenetic processes, classification. *Prerequisites: Geol. 213.*

Geol. 351 Field Geology 8 Credits Summer

Practical experience in the procedures employed in collecting and presenting the basic data obtained from the field. Includes field mapping on topographic maps, aerial photographs, plane table maps, and presentation of results in a professional report and finished geologic map. *Prerequisite: Junior status in Geology.* Students pay own transportation, subsistence, and course tuition fee. Entrance by pre-registration only.

Geol. 400 Earth Sciences Journal Club (1+0) No Credits Fall & Spring

Attendance required by upper division geology majors and graduate students.

Geol. 401 Invertebrate Paleontology (3+3) 4 Credits Fall

Paleontological theory and practice. Systematic study of fossil invertebrates. *Prerequisites: Geol. 101, recommended Biol. 305 (Invertebrate Zool.).*

Geol. 402 Principles of Stratigraphy (2+3) 3 Credits Spring

The history of the development of stratigraphy, its principles and application. *Prerequisites: Geol. 101, recommended Geol. 321, 401.*

Geol. 406 Ore Deposits (3+0) 3 Credits Fall

Form, structure, mineralogy, petrology, and mode of origin of ore deposits. (Field trips.) *Prerequisites: Geol. 214, 314.*

Geol. 408 Map Interpretation (1+9) 4 Credits Fall or Spring

Topographic maps in interpretation of geologic structures, analysis of local and regional geomorphic development. *Prerequisite: Geol. 304.*

Geol. 410 Micropaleontology (2+3) 3 Credits Fall or Spring

Microfossils and their use in stratigraphic correlation. *Prerequisite: Geol. 102. Offered as demand warrants.*

Geol. 411 General Oceanography (3+0) 3 Credits Fall

Description of the oceans and ocean processes; inter-relationship of disciplinary sciences to the field; historical facts of oceanography, modern developments and trends in the field. *Prerequisites: Senior or graduate status in a disciplinary science, mathematics or engineering.*

Geol. 412 Geology of Alaska (2+3) 3 Credits Fall or Spring

Study and interpretation of the geology of Alaska. (Field trips.) *Prerequisites: Geol. 102, 314, 304. Offered as demand warrants.*

Geol. 413 Vertebrate Paleontology (2+3) 3 Credits Fall

Systematic study of the fossil vertebrates with emphasis on evolution, morphology and ecology. (Field trips.) *Prerequisite: Geol. 102.*

Geol. 415 Geology and Engineering (3+0) 3 Credits Fall
Problems of Frozen Ground

Geological and engineering importance of seasonally and perennially frozen ground (permafrost). Properties, distribution, origin of ice in the ground and its application to engineering and land utilization problems in the northern states, Canada, and Alaska. (Field trips.) *Prerequisites: Geol. 101, Phys. 111.*

Geol. 416 Introduction to Geochemistry (3+0) 3 Credits Spring

Introduction to chemistry of the earth. *Prerequisites: Chem. 101, 102.*

Geol. 421 Principles of Seismology (3+0) 3 Credits Fall

Historical introduction, observational seismology, seismometry, simple elastic wave propagation. *Admission by arrangement.*

Geol. 491 Seminar in Geology Credits Arr. Fall

492 Seminar in Geology Credits Arr. Spring

Various subjects studied. *Admission by arrangement.*

Geol. 493 Special Topics— Problems in Various Fields of Geology Credits Arr. Fall

494 Special Topics— Problems in Various Fields of Geology Credits Arr. Spring

Geologic problems of the student's choice approved by instructor. Transportation expenses met by student. No more than 3 credits allowed per semester. *Admission by arrangement.*

Geol. 605 Glacial Geology I (2+3) 3 Credits Fall

Phase relations between solid liquid and vapor states, supercooling, nucleation and freezing of water in all environments: lakes, rivers, oceans, atmosphere, soil, rock, and plant and animal tissue. Diagenetic processes in snow cover, densification of snow to glacier ice. Laboratory and field work. *Admission by arrangement.*

Geol. 606 Glacial Geology II (2+3) 3 Credits Spring

Physical properties of ice from various environments including seasonal and perennially frozen ground. Glaciers, distribution, classification, heat and temperature relations and glacier flow. Glaciation—alpine and continental. Laboratory and field work. *Admission by arrangement.*

Geol. 608 Seminar in Pleistocene Environment (1+0) 1 Credit Spring

Discussion of glaciations, land bridges, Mackenzie Corridor problem, permafrost in relation to biogeography including coming of man. Faculty panel of geologists, glaciologists, anthropologists, biologists, and botanists. *Prerequisite: Geol. 304, 605, 606, or by arrangement. One seminar. Offered as demand warrants.*

Geol. 611 Stratigraphic Paleontology (2+3) 3 Credits Fall
(Paleozoic)

North American index fossils and stratigraphy of North America and Europe. *Prerequisite: Geol. 401, 402. Offered in alternate years; next offered 1967-68.*

Geol. 612 Stratigraphic Paleontology (2+3) 3 Credits Spring
(Mesozoic and Cenozoic)

North American index fossils and stratigraphy of North America and Europe. *Prerequisite: Geol. 401, 402. Offered in alternate years; next offered 1967-68.*

Geol. 613 Marine Geology (3+0) 3 Credits Spring

(On demand)
Survey of marine geology; structure of ocean basins and continental margins; chemical and physical properties of marine sediments; geological processes in the oceans. *Prerequisites:* Senior or graduate status in Geology or appropriate interdisciplinary programs; or by permission of the instructor.

Geol. 622 Advanced Metamorphic Petrology (2+6) 4 Credits Fall

Prerequisite: Geol. 214, 321. Offered in alternate years; next offered 1967-68.

Geol. 624 Advanced Igneous Petrology (2+6) 4 Credits Fall

Prerequisite: Geol. 214, 321. Offered in alternate years; next offered 1966-67.

Geol. 627 Advanced Structural Geology I (3+0) 3 Credits Spring

Large scale structural features, time and place in orogenesis, theories of orogenesis. *Prerequisites:* Geol. 314. Offered in alternate years; next offered 1966-67.

Geol. 628 Advanced Structural Geology II (3+0) 3 Credits Spring

Structural petrology, mechanisms of folding, theoretical basis for mechanical behavior of rocks. *Prerequisite:* Geol. 214, 314. Offered in alternate years; next offered in 67-68.

Geol. 631 Marine Geochemistry (3+0) 3 Credits Fall
(On demand)

Study of chemistry of elements in lithosphere, atmosphere, and hydrosphere with emphasis on the marine environment; importance of glaciers in geochemical geochemical processes. *Prerequisites:* Geol. 416; Chem. 332; Phys. 212; Math. 202; or by permission of the instructor.

Geol. 693 Special Topics Credits Arr. Fall
694 Credits Arr. Spring

Research in various fields.

Geol. 697 Thesis or Dissertation Credits Arr. Fall
698 Credits Arr. Spring

By arrangement. Transportation expenses met by the student.

GERMAN

Ger. 101 Elementary German (5+0) 5 Credits Fall
102 5 Credits Spring

Designed to teach students to hear, speak, read and write German. Oral practice is emphasized.

Ger. 150 Scientific German (3+0) 3 Credits Spring

Rapid acquisition of a reading knowledge of scientific German. Offered as demand warrants.

Ger. 201 Intermediate German (3+0) 3 Credits Fall
202 3 Credits Spring

Continuation of German 102. Increasing emphasis on reading ability and cultural material. Conducted in German. *Prerequisite:* German 102 or 2 years of high school German.

Ger. 321 Studies in German Literature (3+0) 3 Credits Fall
322 3 Credits Spring

Choice of authors genres, or periods of German literature for intensive study. *Prerequisite: German 202, or equivalent.* Students may repeat course for credit when topic varies.

Ger. 493 Special Topics	Credits Arr.	Fall
494	Credits Arr.	Spring

Various subjects in German. Designed for advanced students. Admission by arrangement. *Offered as demand warrants.*

HISTORY

Hist. 117 Formation of European Civilization (3+0)	3 Credits	Fall
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Political, economic and social history of Europe from the late Roman Empire to the Reformation.

Hist. 118 Development of Modern Europe (3+0)	3 Credits	Spring
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Political, social, economic and cultural history of Europe from 1500 to the present. Evolution of nationalism, democracy; their interrelationship with the Industrial Revolution.

Hist. 131 History of the U.S. (3+0)	3 Credits	Fall
132	3 Credits	Spring

Fall semester: The discovery of America to 1865; colonial period, Revolution, formation of the Constitution, western expansion, Civil War.

Spring semester: From the Reconstruction to the present.

Hist. 193 Special Topics	Credits Arranged	Fall
194	Credits Arranged	Spring

Hist. 221 English History (3+0)	3 Credits	Fall
222	3 Credits	Spring

Fall semester: Pre-Roman Britain to the end of the Puritan Revolution, emphasizing constitutional developments.

Spring semester: From the Restoration of 1660 to the present, emphasizing social and economic developments. Offered in alternate years.

Hist. 225 Ancient History (3+0)	3 Credits	Fall or Spring
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Political, social, economic and cultural development of the ancient Near East, Greece and Rome.

Hist. 254 History of Canada (3+0)	3 Credits	Fall or Spring
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The French foundation to the establishment of dominion status, relations with the U.S. and British Commonwealth of nations. Offered as demand warrants.

Hist. 261 Russian History (3+0)	3 Credits	Fall
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Origins of Russia. Kievan Russia. The Mongol Era and the Rise of Muscovy. Early modern Russia.

Hist. 262 Russian History (3+0)	3 Credits	Spring
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The Romanoffs and the Development of the Russian Empire; the Petrine Reforms; the Great Reform of the 19th Century; revolutionary movements; Strains and stresses in Tsarist Russia. *Offered in alternate years.*

Hist. 293 Special Topics	Credits Arranged	Fall
294	Credits Arranged	Spring

Hist. 302 The Old Regime, the Enlightenment and the French Revolution (3+0) 3 Credits Fall

The political, social and economic structure of the Old Regime; intellectual developments in the 18th century; the Revolution and the Napoleonic period; influence of France upon European development in the 18th century. *Prerequisite: Hist. 118.*

Hist. 305 Europe: 1815 to 1870 (3+0) 3 Credits Fall or Spring

Political, economic, social, and intellectual history. Development of Industrial Revolution, romantic movement and unification of Germany and Italy. *Prerequisite: Hist. 118. Offered in alternate years.*

Hist. 306 Europe: 1870 to 1914 (3+0) 3 Credits Fall or Spring

Continuation of Hist. 305. The rise of socialism, imperialism, outbreak of World War I. *Prerequisite: Hist. 118.*

Hist. 315 Contemporary Europe (3+0) 3 Credits Fall or Spring

Europe from 1914 to the present. *Prerequisite: Hist. 117, Hist. 118 or by arrangement. Offered in alternate years.*

Hist. 341 History of Alaska (3+0) 3 Credits Fall

The Russian Background; acquisition, settlement and development of Alaska as an American territory and the 49th state. *Prerequisite: Junior standing.*

Hist. 344 The Soviet Union (3+0) 3 Credits Fall

Origin and development of the Soviet Union from the Revolution of 1917 to the present day; stages of economic development; Soviet government and the Communist Party. *Prerequisite: Hist. 118 or Hist. 261 or by permission. Offered in alternate years.*

Hist. 363 The Far East in Modern Times (3+0) 3 Credits Fall or Spring

Nations of eastern Asia; their relations with the West since the early nineteenth century. *Prerequisite: Admission by arrangement. Offered in alternate years.*

**Hist. 393 Special Topics Credits Arranged Fall
394 Credits Arranged Spring**

Hist. 416 The Renaissance (3+0) 3 Credits Fall or Spring

Political, social, economic, and cultural developments in the Age of the Renaissance. *Prerequisite: Hist. 117, Hist. 118. Offered in alternate years.*

Hist. 417 The Reformation (3+0) 3 Credits Fall or Spring

The Protestant and Catholic Reformations. Political, economic, social and religious conflicts, 1500-1660.

Hist. 430 American Colonial History (3+0) 3 Credits Fall or Spring

Early America; European settlement; economic and social development of the American community; establishment of political independence. *Prerequisite: Hist. 131, Hist. 132. Offered in alternate years.*

Hist. 435 Civil War and Reconstruction (3+0) 3 Credits Fall or Spring

Political, economic, social, and diplomatic history from 1860-77; disruption and reestablishment of the Union. *Prerequisite: Hist. 131, Hist. 132. Offered in alternate years.*

Hist. 440 The Westward Movement (3+0) 3 Credits Fall or Spring

Westward Migration; establishment of new states and political institutions. Influences of the West. *Prerequisite: Hist. 131, Hist. 132. Offered in alternate years.*

Hist. 450 Twentieth Century America (3+0) 3 Credits Fall or Spring

United States from the Progressive Movement to the present day, with emphasis on domestic developments. *Prerequisite: Hist. 131, Hist. 132. Offered in alternate years.*

Hist. 452 Twentieth Century American Diplomacy (3+0) 3 Credits Fall or Spring

Foreign relations from the United States' rise to world power through the Eisenhower administration. *Prerequisite: Hist. 131, Hist. 132. Offered in alternate years.*

**Hist. 461 American Intellectual and Cultural History (3+0) 3 Credits Fall
462 3 Credits Spring**

Lectures, readings, discussion. Examination of the development of American thought, including the transfer and modification of European ideas and the influence of American conditions on popular attitudes and culture. The semester division comes at approximately 1865. *Prerequisite: Hist. 131, Hist. 132. Offered in alternate years.*

Hist. 475 Introduction to Historical Method (3+0) 3 Credits Fall or Spring

Methods of historical research. Preparation and criticism of student research papers on selected topics. Admission by arrangement.

**Hist. 493 Special Topics Credits Arranged Fall
494 Credits Arranged Spring**

Hist. 601 Historiography (3+0) 3 Credits Fall or Spring

History of historical writing. Study and analysis of works of selected major historians.

Hist. 691 Seminar in European History (3+0) 3 Credits Fall or Spring

Hist. 692 Seminar in American History (3+0) 3 Credits Fall or Spring

**Hist. 693 Special Topics (3+0) Credits Arranged Fall
694 Credits Arranged Spring**

**Hist. 697 Thesis Credits Arranged Fall
698 Credits Arranged Spring**

HOME ECONOMICS

H. E. 102 Meal Management (2+3) 3 Credits Fall or Spring

Planning, buying, preparing and serving meals. Emphasis on management, cost, nutrition.

H.E. 113 Clothing Construction and Selection (1+6) 3 Credits Fall or Spring

Fundamental sewing processes in garment construction, using modern techniques. Clothing selection and wardrobe study and the psychological and social significance.

**H.E. 121 Related Art (1+3) 2 Credits Fall
122 2 Credits Spring**

Practice in creative design to understand, appreciate and apply art principles in everyday life. Home furnishing is included in the second semester.

H.E. 211 Textiles (2+3) 3 Credits Fall

Identification, structure, selection, use, care of fabrics.

H.E. 236 Marriage and Family Life (3+0) 3 Credits Fall or Spring

Preparation for marriage and family life: personality development, dating, courtship, engagement, morality, reproduction, conflicts, money matters, crises, divorce, religion, parenthood and other topics.

H.E. 241 Home Management Residence 3 Credits Fall or Spring

Complete responsibility for a home with an opportunity to be creative and to experiment. Credit depends on the time of residence in the University Home Management House. *Admission by arrangement.*

H.E. 242 Household Equipment (2+3) 3 Credits Fall or Spring

Selection, operation, care and efficient arrangement of household equipment for family use. *Offered as demand warrants.*

H.E. 302 Advanced Foods (2+3) 3 Credits Fall or Spring

Food selection and preparation based on composition, nutrition and basic scientific principles and comparison of methods. Food preservation. *Prerequisite: 3 hours of Biol. and 3 hours of Chem.*

H.E. 304 Nutrition (3+0) 3 Credits Fall or Spring

Nutritional value of foods. Planning and evaluation of diets. Practical application to daily living.

H.E. 305 Child Development (2+9) 5 Credits Fall & Spring
(Same as Psy. 305)

Theory and laboratory of human mental, emotional, social, and physical development. *Prerequisite: Psy. 101, 45 collegiate credits, and permission of instructor.*

H.E. 311 Costume Study: History and Design (2+3) 3 Credits Spring

Historic costume; suitability of color, fabric and design; creative problems in costume design. *Prerequisite: H.E. 122 or by arrangement. Offered as demand warrants.*

H.E. 312 Advanced Clothing (1+6) 3 Credits Spring

Advanced clothing problems in selection, fitting, construction, fabrics, and design; modern construction techniques. *Prerequisite: H.E. 113 or by arrangement.*

H.E. 401 Consumer Buying (3+0) 3 Credits Fall or Spring

Problems of consumers in buying goods and services to satisfy wants and needs. *Offered as demand warrants.*

H.E. 402 Nursery School Laboratory (0+9) 3 Credits Fall or Spring

Observation, experience, participation in the guidance of young children. *Prerequisite: H.E. or Psy. 305 and permission of instructor.*

H.E. 404 Quantity Cookery (1+6) 3 Credits Fall or Spring

Cooking for large groups; institutional management. *Prerequisite: H.E. 302. Offered as demand warrants.*

H.E. 405 Camp Cookery (0+3) 1 Credit Fall or Spring

For men only. Preparation of nutritious meals from foods available in camps. *Offered as demand warrants.*

H.E. 406 Cafeteria Management (1+6) 3 Credits Fall or Spring

Buying and management for institutional feeding. *Prerequisite: H.E. 404. Offered as demand warrants.*

H.E. 412 Clothing Problems (0+6) 2 Credits Fall or Spring

Advanced work in clothing selection and construction. 1 Freedom in the selection and execution of problems. *Prerequisite: H.E. 312. Offered as demand warrants.*

H.E. 413 Pattern Drafting and Draping (1+6) 3 Credits Fall or Spring

Drafting of flat patterns; draping of fabrics for construction of student-designed garments. *Prerequisite: H.E. 312. Offered as demand warrants.*

H.E. 422 Weaving (0+3)	1 Credit	Fall
424	1 Credit	Spring

Hand weaving of textiles, including rugs. Several looms used. Laboratory time averages three hours per week. *Offered as demand warrants.*

H.E. 441 Family Health (1+3)	2 Credits	Fall
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Family and community health; home nursing, first aid. *Offered in alternate years; next offered 1967-68.*

H.E. 445 Home Management (3+0)	3 Credits	Fall or Spring
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Time, energy, finance, housing, and other management problems in relation to family living. *Prerequisite: H.E. 241 and Junior standing. Offered in alternate years.*

H.E. 446 House Planning and Furnishing (1+6)	3 Credits	Spring
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Planning, building, furnishing, decorating a home. Field trips to homes. *Offered as demand warrants.*

H.E. 491 Seminar (1+0)	Credits Arr.	Fall
492	Credits Arr.	Spring

Selected topics in Home Economics.

H.E. 493 Special Topics (1+0)	Credits Arr.	Fall
494	Credits Arr.	Spring

Various subjects studied, principally through directed reading and discussions. *Admission by arrangement.*

JAPANESE

Jap. 101 Elementary Japanese (5+0)	5 Credits	Fall
102	5 Credits	Spring

Designed to teach students to hear, speak, read and write Japanese. Oral practice emphasized.

JOURNALISM

Jour. 201 Introduction to Journalism (2+3)	3 Credits	Fall Spring
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Structure of news stories, various news leads and feature stories; gathering and evaluating information for simple news stories; writing stories. *Prerequisite: Engl. 102 or by arrangement. Ability to type is essential.*

Jour. 202 Reporting of Public Affairs (3+0)	3 Credits	Spring
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Study and writing of complex news stories, depth reporting; criticism and reviewing; interviews and features; covering government. *Prerequisite: Journalism 201.*

Jour. 203 Basic Photography (2+3)	3 Credits	Fall or Spring
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Theory and practice of picture-taking and processing; emphasis on the camera in the modern press.

Jour. 204 Journalism Laboratory (2+3, 6 or 9)	1, 2, 3 Credits	Fall or Spring
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Credits arranged for students holding editorial or other positions on university publications or obtaining other similarly supervised experience in journalism practices. *Prerequisite: Engl. 102 or permission. By arrangement.*

Jour. 303 Advanced Photography (1+3) 3 Credits Fall or Spring
Continuation of the basic course, with emphasis on the picture story and free lance photography.

Jour. 311 Magazine Article Writing (3+0) 3 Credits Fall or Spring
Study and practice in writing articles for publication in national media. Students repeating the course limited to a total of six credits. *Admission by arrangement.*

Jour. 312 Editing (3+0) 3 Credits Spring
Editorial writing, editing copy, writing headlines; newspaper layout; general study of mechanical, circulation, editorial, and advertising departments. *Prerequisite: Jour. 202.*

Jour. 320 Journalism in Perspective (3+0) 3 Credits Spring
A survey of the history and principles of Journalism examined in the light of today's problems and future goals.

Jour. 324 Newspaper production, Advertising and Typography (1+6) 3 Credits Fall
Total immersion into theory and practice of advertising, typographic design and layout, coupled with a study of the methods of printing production. Recommended for business administration and journalism majors.

Jour. 412 Advanced Editing (2+3) 3 Credits Spring
Special problems in editing, with emphasis on the practical experience of editing special features, newspaper sections. Students will work closely with Fairbanks newspapers. *Prerequisite: Jour. 312.*

Jour. 433 Public Relations (3+0) 3 Credits Spring
Insights into the techniques, causes and consequences of influencing public opinion; propaganda, mass communication and public relations as instruments of economic, political and social change. *Prerequisite: Jour. 201 or permission.*

Jour. 444 Foreign Correspondence (3+0) 3 Credits Fall or Spring
A study of the foreign press through direct involvement; each student will serve as a correspondent for one of the world's interesting newspapers. *Admission by arrangement.*

Jour. 493 Special Topics Credits Arr. Fall
494 Credits Arr. Spring
Various subjects in journalism. *Offered as demand warrants. Admission by Arrangement.*

Jour. 691 Journalism Seminar Credits Arr. As Demand warrants
692 Credits Arr. As Demand warrants

Jour. 693 Special Topics Credits Arr. Fall
694 Credits Arr. Spring
Various subjects principally by directed study, discussion and research.

Jour. 695 Research Credits Arr. Fall
696 Credits Arr. Spring

Jour. 697 Thesis Credits Arr. Fall
698 Credits Arr. Spring

LAND RESOURCES

Land Res. 101 Conservation of Natural Resources (2+0)

2 Credits

Fall

Conservation of renewable and non-renewable natural resources, emphasizing the United States situation.

Land Res. 311 Soils (2+3)

3 Credits

Spring

Origin and development, weathering, classification, terminology; physical and chemical properties, biology, aeration and moisture; reaction and liming; manures and fertilizers; management; problems in Alaska. *Prerequisite: Chem. 101. Offered alternate years; next offered 1968-69.*

Land. Res. 491 Seminar 492

Credits Arr.

Fall

Credits Arr.

Spring

Topics in land resources. *Offered as demand warrants.*

Land Res. 493 Special Topics 494

Credits Arr.

Fall

Credits Arr.

Spring

Land Res. 691 Seminar 692

Credits Arr.

Fall

Credits Arr.

Spring

Topics in land resources. *Offered as demand warrants.*

Land Res. 693 Special Topics 694

Credits Arr.

Fall

Credits Arr.

Spring

Land. Res. 697 Thesis 698

Credits Arr.

Fall

Credits Arr.

Spring

Admission by arrangement.

LINGUISTICS

Ling. 381 Structural Linguistics and (3+0) 382 Linguistics Analysis

3 Credits

Fall

3 Credits

Spring

Introduction to the structure of language and practice in analysis, sound structure (phonetics and phonology); grammatical structure (morphology and syntax). Work with Alaskan Native languages. *Offered as demand warrants.*

Ling. 285, 385 Alaskan Eskimo (3+0) 286, 386

3 Credits

Fall

3 Credits

Spring

Analysis of the living language with native speaker in the classroom. Learning to read and write the language. *Admission by arrangement. Offered as demand warrants.*

Ling. 388 Alaskan Athapaskan (3+0)

3 Credits

Spring

Athapaskan languages in general and Alaskan dialects in particular; dialect geography, comparative phonology; Eyak, Tlingit, Haida. *Admission by arrangement. Offered as demand warrants.*

Ling. 485 Eskimo Workshop 486

Credits Arr.

Fall

Credits Arr.

Spring

Advanced work in Eskimo, including creative writing, transcription of texts, study of comparative Eskimo dialectology; Aleut; preparation of materials for radio broadcasts and publication. *Prerequisite: Ling. 286 or 386, or speaking knowledge of Eskimo and permission of instructor. Offered as demand warrants.*

Ling. 493 Special Topics

Credits Arr.

Fall

Various languages and subjects in linguistics. Admission by arrangement. *Offered as demand warrants.*

MATHEMATICS

No student will be permitted to enroll in a course having prerequisites if a grade lower than C is received in the prerequisite course.

Math. A Review of Algebra (5+0)

0 Credits

Fall or Summer

Required of those insufficiently prepared to take Math. 121 or 106. May be used to remove high school deficiency. Five classes 1 hour.

Math. 106 College Algebra and Trigonometry (5+0)

5 Credits

Fall or Spring

Review of high school algebra, determinants, matrices, topics in the theory of equations, systems of equations, inequalities, curve sketching, probability, and applications; plane trigonometry with emphasis on the analytical and periodic properties of trigonometric functions.

***Math. 107 College Algebra (3+0)**

3 Credits

Fall or Spring

Review of high school algebra, determinants, matrices, topics in the theory of equations, systems of equations, inequalities, curve sketching, probability, and applications.

Math. 108 Trigonometry (2+0)

2 Credits

Fall or Spring

Plane trigonometry with emphasis on the analytical and periodic properties of trigonometric functions. *Prerequisite: Math. A or equivalent.*

***Math. 109 Analytic Geometry (3+0)**

3 Credits

Fall or Spring

Rectangular co-ordinate system, the straight line, conic sections, transcendental curves, polar co-ordinates, parametric equations, and solid analytic geometry. *Prerequisite: High School trigonometry or Math. 108.*

Math. 110 Mathematics of Finance (3+0)

3 Credits

Spring

Simple and compound interest, discount, annuities, amortization, sinking funds, depreciation and capitalization. *Prerequisite: Math A. or by arrangement.*

***Math. 111 Beginning Calculus (3+0)**

3 Credits

Fall or Spring

Sequences, limits, differentiation and applications, integration and applications, differentiation of algebraic and transcendental functions. *Prerequisite: Math. 109.*

Math. 121 Introduction Modern Algebra & Analysis

4 Credits

Fall

122

4 Credits

Spring

First semester: Sets, relations, functions, algebraic systems, groups, rings, fields, vectors spaces, matrices, and linear transformations.

Second semester: Trigonometry limits, continuity, differentiation, integration, differential equations, difference equations. *This sequence is not open for credit to Math majors. The student may enroll in Math. 200 upon completion of this sequence.*

Math. 200 Calculus (4+0)

4 Credits

Fall or Spring

201

4 Credits

Fall or Spring

202

4 Credits

Fall or Spring

Techniques and application of differential and integral calculus, vector analysis, partial derivatives, multiple integrals and infinite series. *Prerequisite: Math. 106 or 122. Admission to Math. 201 is also possible on completion of Math. 111.*

Math. 204 Elementary Probability & Statistics (3+0) 3 Credits Spring

Descriptive statistics, frequency distributions, mean, median, mode, standard deviation; elementary probability; inferential statistics, estimation of population parameters, tests of hypothesis, including non-parametric methods, correlation, linear regression, and analysis of variance. *Prerequisite: Math. 106 or Math. 121.*

Math. 205 Mathematics for Teachers (3+0) 3 Credits Fall

Background for better understanding and appreciation of fundamental principles, underlying mathematics taught in elementary schools. *Prerequisite: Math. 121.*

Math. 302 Differential Equations (3+0) 3 Credits Fall

Nature and origin of differential equations; first order equations and solutions, linear differential equations with constant coefficients, systems of equations, power series solutions, operational methods, applications. *Prerequisite: Math. 202.*

Math. 303 Introduction to Modern Algebra (3+0) 3 Credits Fall

A critical examination of the familiar real and complex number system from a postulational point of view, followed by generalizations to groups, rings, and fields.

Math. 309 Programming of Digital Computers (3+0) 3 Credits Fall

Organization, function, and application of digital computers, with special reference to IBM 1620. Programming languages, including machine language, SPS, FORTRAN, and Algol. Directed primarily to needs of scientific and statistical calculation. Emphasis on individual use of the IBM 1620. *Prerequisite: Math. 202 or Math. 204 or permission of instructor.*

Math. 310 Numerical Analysis (3+0) 3 Credits Spring

Finite differences, numerical solutions of differential equations, relaxation methods, interpolation, equations and matrices. *Prerequisite: Math 302 and Math 309.*

Math. 312 Numerical Methods for Engineers (3+0) 3 Credits Spring

Numerical analysis and computer programming designed for engineering students. FORTRAN language for IBM 1620; numerical approximations, solution of differential equations, nonlinear equations, iterative and direct methods for simultaneous linear equations. Individual use of computer parallels lecture topics. *Prerequisite: Math 302.*

Math. 314 Linear Algebra (3+0) 3 Credits Spring

Linear equations, vector spaces, matrices, determinants, linear transformations, characteristic values. Inner product spaces.

Math. 345C Modern Math Concepts for the Elementary School 3 Credits Correspondence or upon demand

Include a study of the historical development of numeral systems together with operations in various bases. Properties of numerals and numbers are discussed. A brief study of symbolic logic precedes an investigation of the structure of arithmetic, seeking basic principles underlying operations with various number and abstract systems. A survey of informal and intuitive geometry and its relationship with number systems is included.

**Math. 371 Probability (3+0) 3 Credits Fall
372 3 Credits Spring**

Definitions, sample spaces combinatorial analysis, occupancy and ordering problems, conditional probability. Poisson, binomial, and normal distributions, random variables, expectation, law of large numbers, characteristic functions. *Prerequisite: Math. 202.*

**Math. 401 Advanced Calculus (3+0) 3 Credits Fall
402 3 Credits Spring**

Partial differentiation, vectors, Stieltjes integral, multiple integrals, line and surface integrals, series, convergence of improper integrals, Fourier series. *Prerequisite: Math.*

Math. 407 Mathematical Statistics (3+0) 3 Credits Fall
408 3 Credits Spring

Distributions of random variables and functions of random variables, interval estimation, point estimation, sufficient statistics, order statistics, test of hypotheses including criteria for goodness of test. *Prerequisite: Math. 372. Offered as demand warrants.*

Math. 409 Experimental Design (3+0) 3 Credits Fall

Methods of analyzing data; constructing and analyzing data; constructing and analyzing designs for experimental investigations; completely randomized, randomized block, and Latin-square designs, split-plot design, incomplete block design, simple and partially confounded factorial designs, lattice and cubic lattice designs, treatment of missing data, comparison of designs. *Prerequisite: Math. 202. Offered as demand warrants.*

Math. 415 Game Theory & Linear Programming (3+0) 3 Credits Fall

Mathematical approach to Game Theory and Linear Programming with application to economics and operations research. *Prerequisite: Math. 314.*

Math. 417 Differential Geometry (3+0) 3 Credits Fall
418 3 Credits Spring

Differential geometry of curves and space in Euclidean three-space and extensions to Riemannian n-space.

Math. 421 Vector and Tensor Analysis (3+0) 3 Credits

Fundamental operations on vectors and tensors, consideration of gradient, divergence, and curl; applications in physics and mechanics. *Offered as demand warrants.*

Math. 471 Stochastic Processes (3+0) 3 Credits Fall

Elements of stochastic processes and their applications, the Wiener process and the Poisson process, stationary and evolutionary processes, harmonic analysis, random walks, Markov Chains, and elementary queueing theory. *Prerequisite: Math. 372. Offered as demand warrants.*

Math. 491 Seminar Credits Arranged Fall
492 Credits Arranged Spring

Topics are selected according to needs and interests of the students to introduce them to independent study and research.

Math. 493 Special Topics (2+0) Credits Arranged Fall
494 Credits Arranged Spring

Primarily for mathematics majors. Various topics studies.

Math. 601 Complex Function Theory (3+0) 3 Credits Fall
602 3 Credits Spring

Analytic functions, singularities, analytic continuation, integration, Riemann surfaces, the logarithmic function, conformal representation. *Prerequisite: Math. 402 or by arrangement. Offered as demand warrants.*

Math. 605 Real Function Theory (3+0) 3 Credits Fall
606 3 Credits Spring

Real number system, sequences, topological spaces, measure theory, Lebesgue integral. *Prerequisite: Math. 402, or by arrangement. Offered as demand warrants.*

Math. 608	Partial Differential Equations (3+0)	3 Credits	Spring
First and second order differential equations, boundary value problems, existence and uniqueness theorems, Green's functions, principal equations of mathematical physics. <i>Prerequisite: Math 402, or by arrangement. Offered as demand warrants.</i>			
Math. 609	Modern Algebra (3+0)	3 Credits	Fall
610		3 Credits	Spring
Groups, rings, fields, matrices, lattices, vector spaces, representation. <i>Prerequisite: Math. 303. Offered as demand warrants.</i>			
Math. 611	Mathematics of Physics & Engineering (3+0)		
612		3 Credits	Fall
		3 Credits	Spring
Infinite series, functions of several variables, algebra and geometry of vectors, matrices, vector field theory, partial differential equations, complex variables. <i>Prerequisite: Math. 302. Offered as demand warrants.</i>			
Math. 693	Special Topics	Credits Arranged	Fall
694		Credits Arranged	Spring
Various subjects studied.			
Math. 697	Thesis	Credits Arranged	Fall
698		Credits Arranged	Spring

*Not offered on College campus.

MECHANICAL ENGINEERING

M.E. 302	Kinematics of Machines (2+3)	3 Credits	Spring
Velocity and acceleration analyses of mechanisms and machines; principles of transforming and transmitting motion, including linkages, cams, gears, belts, chains, and trains of mechanism; dimensional synthesis. <i>Prerequisite: Math. 202, E.S. 208.</i>			
M.E. 321	Industrial Processes (3+0)	3 Credits	Fall
Methods and equipment used in working, welding, casting, cutting, machining and fabrication of materials.			
M.E. 401	Machine Design (2+6)	3 Credits	Fall
Design of machine elements, including allowances, tolerances, keys, shafts, couplings, springs, clutches, belts, brakes, flywheels, power screws, gears, bearings, lubrication and stress analysis of components. <i>Prerequisite: E.S. 331, M.E. 302.</i>			
M.E. 412	Space Conditioning (2+3)	3 Credits	Spring
Principles of heating, ventilating, air conditioning and refrigeration with practical applications. <i>Prerequisite: E.S. 341, E.S. 346, M.E. 441.</i>			
M.E. 413	Mechanical Engineering Thermodynamics (3+0)	3 Credits	Fall
Continuation of E.S. 346, including vapor power cycles (rankine, reheat, binary and regenerative cycles); flow through nozzles and diffusers; gas power cycles; gas mixtures and psychrometrics; vapor compression refrigeration cycles. <i>Prerequisite: E.S. 346, E.S. 341.</i>			
M.E. 418	Power Analysis (3+3)	4 Credits	Spring
Fundamentals of power generation including piping, pumps, fuels and combustion, steam generators, condensers, deaerators, evaporators, feedwater treatment and heating, regeneration, fuel handling, heat balance, equipment, economics and plant layout. <i>Prerequisite: M.E. 413.</i>			

M.E. 430 Instruments and Controls (2+3) 3 Credits Fall or Spring

Automatic control and instrumentation of equipment including mechanical, hydraulic, pneumatic, electric and electronic systems. *As demand warrants. Prerequisite: Senior standing.*

M.E. 441 Introductory Heat Transfer (3+0) 3 Credits Fall

Theory of heat and mass transfer, including transient, two dimensional heat flow and changes of state. *Prerequisite: E.S. 346.*

METALLURGY

Met. 304 Introduction to Metallurgy (3+0) 3 Credits Spring

Definitions and principles of basic science and engineering principles as applied to process and adaptive metallurgy. *Prerequisites: Math. 102, Chem. 202, or 211, Phys. 212.*

Met. 312 Fire Assaying (0+6) 2 Credits Spring

Sampling and preparation of ores, mill products, and smelter products for assay. Assaying gold; silver, and lead. *Prerequisite: Met. 301, concurrent Chem. 212. Offered as demand warrants.*

Met. 332 Physical Metallurgy and Metallography (3+3) 4 Credits Spring

Properties of metals and alloys, metal crystals, chemical and metallic bonds, equilibrium diagrams, defect in metals, heat treatment, pyrometry, foundry, forging welding, principles and application of electron microscope, x-ray. Electron and x-ray diffraction. Equipment used in metallurgy. *Prerequisite: Met. 304. Offered as demand warrants.*

Met. 493 Special Topics Credits Arr. Fall
494 Credits Arr. Spring

Various subjects studied, principally through directed reading and discussions. *Admission by arrangement.*

Met. 693 Special Topics Credits Arr. Fall
694 Credits Arr. Spring

Various subjects studied. *Admission by arrangement.*

MILITARY SCIENCE

Mil. 101 First-Year Military Science (2+1) 1½ Credits Fall
102 1½ Credits Spring

First-year basic: Organization of the Army; individual weapons and marksmanship; U.S. Army and National Security; school of the soldier and exercise of command.

Mil. 201 Second-Year Military Science (2+1) 1½ Credits Fall
202 1½ Credits Spring

Second-year basic: American military history; map and aerial photography reading; introduction to operations and basic tactics; school of the soldier and exercise of command.

Mil. 301 Third-Year Military Science (3+1) 3 Credits Fall
302 3 Credits Spring

First-year advanced: Leadership; military teaching; branches of the Army; small unit tactics; communications; school of the soldier and exercise of command.

Mil. 401	Fourth-Year Military Science (3+1)	3 Credits	Fall
402		3 Credits	Spring

Second-year advanced: Operations; logistics; Army administration; military law; the role of the U.S. in world affairs; service orientation; school of the soldier and exercise of command.

Mil. 403	ROTC Flight Training	2 Credits	Fall
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Thirty-five hours of ground school and thirty-six and one-half hours of flight; includes FAA flight check.

MINERAL PREPARATION ENGINEERING

M.Pr. 313	Introduction to Mineral Preparation (2+3)	3 Credits	Fall
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Elementary theory and principles of unit processes of liberation, concentration and solid-fluid separation as applied to mineral beneficiation. *Prerequisite: Junior standing or by permission.*

M.Pr. 314	Unit Preparation Processes (1+6)	3 Credits	Spring
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Principles and practices involved in liberation and concentration by gravity, electromagnetic and electrostatic methods. Analysis of costs and economics of mill operation. Flowsheets for different ores developed in the laboratory on a pilot plant scale. *Prerequisite: Min. Pr. 313.*

M.Pr. 418	Emission Spectroscopy, X-ray Spectroscopy and Electron Microscopy (2+3)	3 Credits	Spring
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Can be taken for any combination of Parts A, B, C.

M.Pr. 418A—Theory and application of emission spectrography; two, one hour classes; one three hour lab per week for five weeks. 1 Credit.

M.Pr. 418B—Theory and application of x-ray spectrograph; two, one hour classes; one three hour lab per week for five weeks. 1 Credit.

M.Pr. 418C—Theory and application of electron microscope; two, one hour classes; one, three hour lab per week for five weeks. 1 Credit.

Admission by Arrangement.

M.Pr. 433	Coal Preparation (2+3)	3 Credits	Fall
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Unit operations, flowsheets, washability characteristics and control by sink-float methods for coal preparation plants. Market requirements and economics of preparation. *Prerequisites: Min. Pr. 313.*

M.Pr. 493	Special Topics	Credits Arr.	Fall
494	Special Topics	Credits Arr.	Spring

Various subjects studied through directed reading, discussions and laboratory work. *Admission by arrangement.*

M.Pr. 601	Froth Flotation (2+3)	3 Credits	Fall
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Theory and application of bulk and differential froth flotation to metallic minerals, non-metallic minerals and coal. *Admission by arrangement.*

M.Pr. 606	Plant Design (1+6)	3 Credits	Spring
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Selection, design and layout of equipment for erection and operation of mineral and coal beneficiation plants for specific custom and milling problems. *Admission by arrangement.*

M.Pr. 693	Special Topics	Credits Arr.	Fall
694		Credits Arr.	Spring

Various subjects studied. *Admission by arrangement.*

M.Pr. 695 Mineral Preparation Research (1+6)	3 Credits	Fall
696	3 Credits	Spring

Familiarizes students with the concept of basic research and its needs in the field of mineral beneficiation, including such research subjects as magnetic susceptibility, dielectric constants and electrical conductivity of minerals; chemical theory and mechanism of bubble contact in flotation; the effect of ultrasonic vibration in unit processes. *Admission by arrangement.*

M.Pr. 697 Thesis	3 Credits	Fall
698	3 Credits	Spring

Application of fundamentals to the actual beneficiation problems of Alaskan ores; to produce increased effectiveness in ability to organize, interpret, and present the results of research clearly, precisely and with meaning in acceptable thesis form.

MINING ENGINEERING

Min. 102 Mining Engineering Systems A, B, C (4+0)	4 Credits	Spring
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Can be taken for any combination of parts A, B, C.

Min. 102A—Introduction to mineral industries and elementary principles of exploration. Four, one hour classes per week for 4 weeks. 1 Credit.

Min. 102B—Utilization and application of mining explosives. Four, one hour classes for 4 weeks. 1 Credit.

Min. 102C—Fundamentals of Mining systems for bedded, massive, vein and surface deposits. Four, one hour classes per week for 8 weeks. 2 Credits.

Min. 302 Mine Surveying (2+3)	3 Credits	Spring
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Surveying principles for surface and underground control of mining properties. Field and office procedures for preparation of maps and engineering data. *Prerequisite: E.S. 112.*

Min. 303 Mining Plant Engineering (3+3)	4 Credits	Fall
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Principles of mine ventilation, haulage, pumping and energy transmission systems. *Prerequisites: Min. 102, Phys. 212 and E.S. 341 (concurrent).*

Min. 306 Rock Mechanics (2+3)	3 Credits	Spring
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Analysis of stress and strain. Physical properties of rock and fundamentals of rock behavior. Rock stresses in mining with design and layout of underground workings. *Prerequisite: E.S. 331*

Min. 331 Mining Law (2+0)	2 Credits	Fall
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History of the development of mining law; the essentials of mining laws of the United States and Alaska. Discussions and interpretation of important court decisions in mining litigation. *Offered as demand warrants.*

Min. 400 Practical Engineering Report	1 Credit	Spring
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Twelve weeks practical work in some industry or project related to the students option, or equivalent. Performed during one or more of the summer vacations prior to the fourth year. *Offered as demand warrants.*

Min. 405 Geophysical and Geochemical Exploration (2+3)	3 Credits	Fall
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Theory and techniques of geophysical and geochemical exploration. Chemical, gravimetric, seismic, electrical, magnetic and radioactive measurements. *Prerequisites: Chem. 202, Phys. 212.*

Min. 408 Mineral Valuation and Economics (3+3)	4 Credits	Spring
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Theory of sampling techniques, deposit and reserve calculations, and analysis of mineral economic problems. *Prerequisite: Min. 102 or permission.*

Min. 430 Seminar and Senior Field Trip 1 Credit Fall or Spring

Mining field trip. Mines and districts, selected for exemplifying and providing instruction in geological principles, mining methods, metallurgical practices, and industrial economics. Seminar discussions cover operations and industries visited and current mineral industry problems. *Prerequisite: Senior standing and by permission. Fee: Field trip expenses to be paid by student. Offered as demand warrants.*

Min. 493 Special Topics Credits Arr. Fall
494 Special Topics Credits Arr. Spring

Various subjects studied, principally through directed reading and discussion. *Admission by arrangement.*

Min. 496 Mining or Mineral Research (1+6) 3 Credits Spring

Selected mining, mineral preparation or mineral economic research problems. *Prerequisite: Senior standing or permission.*

Min. 621 Advanced Mineral Economics (3+0) 3 Credits Fall

Economics of mineral exploitation and utilization. International trade, state and federal policies, financial control and research methods. *Admission by arrangement.*

Min. 691 Seminar Credits Arr. Fall
692 Credits Arr. Spring

Reading and report required. *Admission by arrangement.*

Min. 693 Special Topics Credits Arr. Fall
694 Credits Arr. Spring

Various subjects studied. *Admission by arrangement.*

Min. 697 Thesis Credits Arr. Fall
698 Credits Arr. Spring

MUSIC

APPLIED MUSIC

Music 101 Chorus (0+3) 1 Credit Fall
 1 Credit Spring

Music 109 R.O.T.C. Band (0+3) 1 Credit Fall
 1 Credit Spring

Music 203 Orchestra (0+3) 1 Credit Fall
 1 Credit Spring

Music 205 Concert Band (0+3) 1 Credit Fall
 1 Credit Spring

Music 211 "Choir of the North" (0+3) 1 Credit Fall
 1 Credit Spring

Music 307 Chamber Music (0+3) 1 Credit Fall
 1 Credit Spring

Music 313 Opera Workshop (0+3, 6, or 9) 1, 2, 3 Credits Fall
 1, 2, 3 Credits Spring

Music 317 Collegium Musicum (0+3) 1 Credit Fall
 1 Credit Spring

Note: Admission to ensemble courses above the 100 level is by permission of the instructor. Ensemble courses may be repeated for credit; a maximum of 12 such credits may be counted towards graduation.

Music 151, 251	Class Lessons (0+3)	1 Credit	Fall
152, 252		1 Credit	Spring

Class instruction in piano, voice, or orchestral instrument.

Fees for Class Lessons:	Practice Room Rental	7.50
	Lesson Fee	\$15.00

Above fees waived for students enrolled in 7 or more credit hours and majoring or minoring in Music or Music Education.

Music 161, 261, 361, 461	Private Lessons (1+0)	1 Credit	Fall
162, 262, 362, 462		1 Credit	Spring

Private instruction in piano, voice, or orchestral instrument. *Prerequisite: Admission by examination.*

Fees for Private Lessons:	Practice Room Rental	7.50
	Lesson Fee	\$45.00

Above fees waived for students enrolled in 7 or more credit hours and majoring or minoring in Music or Music Education.

MUSIC THEORY AND HISTORY

Music 51	Music Fundamentals (3+0)	3 Credits	Fall
52		3 Credits	Spring

Rudiments of music for students with little or no prior training in music reading.

Music 123	Introduction to Music (2+3)	3 Credits	Fall
		3 Credits	Spring

Cultivation of the understanding and intelligent enjoyment of music through a study of its elements, forms, and historical styles. Open to all students, including music majors, but not a part of the music major curriculum. May be repeated for maximum of 6 hours credit.

Music 131	Basic Theory (2+3)	3 Credits	Fall
132		3 Credits	Spring

Rhythmic, melodic, and harmonic dictation; keyboard harmony, including resolution of figured bass; sight-singing and ear training; stylistic analysis of works of eighteenth and nineteenth century composers. Semesters must be taken in sequence.

Music 231	Advanced Theory (2+3)	3 Credits	Fall
232		3 Credits	Spring

Continuation of Music 131-2, which is prerequisite. Development of greater keyboard facility and more advanced harmonic vocabulary; analysis of works by some twentieth century composers. Semesters must be taken in sequence.

Music 321	History of Music (3+0)	3 Credits	Fall
322		3 Credits	Spring

Fall Semester: Music before 1750. Spring Semester: Music since 1750. Prerequisite: Music 232 or permission of instructor.

Music 331	Form and Analysis (1+3)	2 Credits	Fall
332		2 Credits	Spring

Fall Semester: Dance forms of the seventeenth and eighteenth centuries. Development of the various sonata forms. Spring Semester: Detailed analysis of sonatas by Haydn, Mozart, and Beethoven. Prerequisite: Music 232 or consent of the instructor. Semesters must be taken in sequence.

Music 491	Senior Seminar (2+0)	2 Credits	Fall
492		2 Credits	Spring

Variety of subject matter depending on the interests and needs of students.

Music 493	Special Topics	Credit Arr.	Fall
494		Credit Arr.	Spring

Various subjects. Admission by arrangement.

MUSIC EDUCATION

Music 243	Education, Music for the Classroom	3 Credits	Fall
	Teacher (2+3)	3 Credits	Spring

Introduction to music through experiences related to the teaching of music in the elementary school classroom.

Music 315	Instrumental Methods and		
	Techniques (1+3)	2 Credits	Fall
316		2 Credits	Spring

Playing and teaching of band instruments. *Fall Semester: Brass instruments. Spring Semester: Woodwinds. Prerequisite: Music 232 or permission of instructor.*

Music 343	Education, Music in the Elementary		
	School (3+0)	3 Credits	Spring

Principles, procedures, and materials for teaching music to children at the elementary level. *Prerequisite: Music 232, 243, or permission of instructor.*

Music 405	Methods of Teaching Music (3+0)	3 Credits	As demand warrants
See description under Ed. 405, Methods of Teaching Music.			

Music 415	Instrumental Methods and		
	Techniques (1+3)	2 Credits	Fall
416		2 Credits	Spring

Playing and teaching of string instruments. *Fall Semester: Violin and Viola. Spring Semester: Cello and Bass. Prerequisite: Music 232 or permission of instructor.*

OFFICE ADMINISTRATION

O.A. 61	Clerical Skills (3+0)	3 Credits	Fall
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Instruction in various duplicating processes, filing, responsibilities and duties of a clerical worker.

O.A. 63	Adding and Calculating Machines (1+2)	3 Credits	Spring or Fall
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Basic operation of adding and calculating machines.

O.A. 65	Dictaphone Transcription (3+0)	3 Credits	Fall
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Transcription from various voice-writing machines with special emphasis on spelling, word choice, and grammar.

O.A. 66	Dictaphone Transcription (3+0)	3 Credits	Spring
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Transcription training, with emphasis on mailable material and efficient office routine and setting up letter.

O.A. 93	Special Topics	Credits Arr.	Fall
94	Special Topics	Credits Arr.	Spring

O.A. 99	Office Practice (2+10)	6 Credits	Spring
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Same as O.A. 299

O.A. 101	Shorthand (2+2)	3 Credits	Fall
102		3 Credits	Spring

Beginning Gregg Shorthand for secretarial students. Theory and reading practice first semester; dictation and transcription practice second semester.

O.A. 103	Elementary Typewriting (2+2)	2 Credits	Fall or Spring
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Basic typewriting skills, techniques of copy work and introduction to letter writing and simple tabulations. For students who have had no previous typewriting.

O.A. 105	Intermediate Typewriting (2+2)	2 Credits	Fall or Spring
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Speed development and application of typewriting skill to special letter problems, tabulations and office problems. *Prerequisite: One year of high school typewriting or O.A. 103.*

O.A. 106	Advanced Typewriting (2+2)	2 Credits	Fall or Spring
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Letter writing with special problems, reports, business forms, statistical tabulations and legal documents; emphasis is on speed and office standards. *Prerequisite: O.A. 105 or equivalent and speed of 40 words per minute.*

O.A. 107	Advanced Dictaphone Transcription (3+0)	3 Credits	Fall or Spring
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Advanced transcription training with emphasis on mailable, speed, meeting deadlines, and working under pressure.

O.A. 193	Special Topics	Credits Arr.	Fall
194		Credits Arr.	Spring

O.A. 201	Intermediate Stenography (2+2)	3 Credits	Fall
202	Advanced Stenography	3 Credits	Spring

High speed shorthand dictation and transcription. *Prerequisite: O.A. 102 and O.A. 106 or equivalent.*

O.A. 203	Office Machines (1+2)	3 Credits	Fall
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Basic operation of calculating, adding, duplicating, and dictation machines. *Prerequisite: O.A. 105 or equivalent.*

O.A. 208	Specialized Secretarial Skills (3+0)	3 Credits	Fall or Spring
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Principles, practices, and rules of filing. Training and practice in the operation of transcribing machines, responsibilities and duties of the secretary; business ethics and the preparation of office manuals.

O.A. 231	Business Correspondence (3+0)	3 Credits	Fall
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Fundamentals of business writing; emphasis on clarity, accuracy, and effectiveness in the writing of business letters and reports. *Prerequisite: Engl. 102, O.A. 105 or equivalent.*

O.A. 293	Special Topics	Credits Arr.	Fall
294		Credits Arr.	Spring

O.A. 299	Office Practice (2+10)	6 Credits	Spring
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Actual office experience. Students would be required to work in selected offices on campus for 10 hours each week. He would also meet two class hours per week and discuss receptionist duties in an office — including business ethics, telephone techniques, meeting callers, taking orders, getting along with fellow employees, subordinates and superiors.

O.A. 302	Secretarial Training (3+0)	3 Credits	Spring
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Business office systems, procedures, organization; professional secretarial standards and practices; C.P.S. program and requirements.

O.A. 351 Readings in Office Administration (1+0) 1 Credit Fall or Spring

Readings in current problems, practices, procedures, methods. Not more than 2 credits to be earned by any student.

O.A. 360 C.P.S. Coaching (3+0) 3 Credits Fall or Spring

Review of current professional literature, a study of material covered in recent C.P.S. examinations, and solving of problems under examination conditions. Guidelines of the course are the requirements for the C.P.S. examination. *Prerequisite: Senior standing or approval of instructor.*

O.A. 393 Special Topics Credits Arr. Fall
394 Special Topics Credits Arr. Spring

O.A. 493 Special Topics Credits Arr. Fall
Special Topics Credits Arr. Spring

O.A. 499 Office Practice (2+10) 6 Credits Spring

Description same as O.A. 299.

PHILOSOPHY

Phil. 201 Introduction to Philosophy (3+0) 3 Credits Fall

Terms, concepts and problems as reflected in writings of great philosophers. *Prerequisite: Engl. 102, Sophomore standing. Three classes 1 hour.*

Phil. 204 Introduction to Logic (3+0) 3 Credits Spring

Principles of deductive and inductive logic, application of these laws in science and other fields; brief introduction to symbolic logic and its applications. *Prerequisite: Sophomore standing. Three classes 1 hour.*

Phil. 321 Aesthetics (3+0) 3 Credits Fall

The nature of aesthetic experience in poetry, music, painting, sculpture and architecture; studies in relation to artistic production and the role of art in society. *Offered in alternate years; next offered 1967-68.*

Phil. 332 Ethics (3+0) 3 Credits Spring

Examination of ethical theories and basic issues of moral thought. *Offered in alternate years; next offered 1967-68.*

Phil. 341 Epistemology (3+0) 3 Credits Fall

The nature of knowledge, truth and certainty. *Offered in alternate years, next offered 1968-69. Prerequisite: Phil. 201.*

Phil. 342 Metaphysics (3+0) 3 Credits Spring

The nature of reality comprising both ontology and cosmology. *Offered in alternate years, next offered 1968-69. Prerequisite: Phil. 201.*

Phil. 351 History of Philosophy (3+0) 3 Credits Fall

Ancient and Medieval periods. *Prerequisite: 6 credits in Philosophy or Social Science.*

Phil. 352 History of Philosophy (3+0) 3 Credits Spring

Renaissance, Modern, and Recent periods. *Prerequisite: 6 credits in Philosophy or Social Science.*

Phil. 471 Contemporary Philosophical Problems (3+0) 3 Credits Fall

Ideological issues facing the modern world. *Prerequisite: 9 credits in Philosophy or permission of instructor.*

Phil. 481 Philosophy of Science (3+0) 3 Credits Fall

Comparison and discussion of various contemporary methodological positions. *Prerequisite: Junior standing.*

Phil. 482 Comparative Religion (3+0) 3 Credits Spring

Seven world faiths represent answers to questions of man's duty, his destiny, and his nature. *Prerequisite: Permission of instructor.*

Phil. 484 Philosophy of History (3+0) 3 Credits Spring

Critical examination of the nature of history and historical inquiry. *Prerequisite: 9 credits in Philosophy or Social Science.*

Phil. 493 Special Topics Credits Arr. Fall
494 Credits Arr. Spring

Various subjects. Credits arranged.

PHYSICAL EDUCATION

P.E. 101 Freshman Physical Education (Women) (0+3) 1 Credit Fall
102 1 Credit Spring

Required for women; a variety of activities to improve the physical condition, coordination and physical skills of the individual; regulation gym suits are required.

P.E. 103 Fundamentals of Sports — (0+2)
Tennis and Badminton 1 Credit Fall

Skills, rules, strategies, terminology of tennis and badminton.

P.E. 105 Freshman Physical Education (Men) (0+3) 1 Credit Fall
106 1 Credit Spring

Required for men, except R.O.T.C. Cadets, ex-servicemen and physical education majors; selected activities for the acquisition of physical skills, leisure-time activities and physical vigor. Regulation gym suits are required.

P.E. 107 Beginning Swimming (0+3) 1 Credit Fall or Spring

Front and back float, front and back strokes and other basic strokes; non-swimmers only are eligible; may substitute for P.E. 201 or 202 (Women); P.E. 105 (Men); may not be taken concurrently with P.E. 101, 102, 201, 202 (Women), or P.E. 105, 106, 205, 206 (Men).

P.E. 108 Handball (0+3) 1 Credit Spring

Fundamentals, rules and strategy of handball.

P.E. 109 Beginning Skiing (0+3) 1 Credit Spring

Fundamentals of skiing on slopes.

P.E. 113 Ice Skating (0+3) 1 Credit Fall

Fundamentals and techniques. Outdoor and indoor activities conducted until ice is available.

P.E. 142 Personal and Community Health (3+0) 3 Credits Spring
Development of positive health attitudes; principles and practices of personal and community health.

P.E. 146 First Aid (2+0) 2 Credits Fall or Spring
Knowledge and skills necessary to provide efficient aid and treatment in emergencies.

P.E. 201 Sophomore Physical Education (Women) (0+3) 1 Credit Fall
202 1 Credit Spring

Required for women; a variety of activities to improve the physical condition, coordination, and physical skills of the individual. Regulation gym suits are required.

P.E. 205 Sophomore Physical Education (Men) (0+3) 1 Credit Fall
206 1 Credit Spring

Required for men, except R.O.T.C. Cadets, ex-servicemen and physical education majors; selected activities for the acquisition of physical skills, leisure-time activities and physical vigor. Regulation gym suits are required.

P.E. 207 Intermediate Swimming (0+3) 1 Credit Fall or Spring
Advanced instruction in basic strokes, stressing skill in performance and endurance; instruction in water safety and accident prevention. *Prerequisite: P.E. 107 or ability to swim one hundred yards with good form.*

P.E. 209 Advanced Skiing (0+3) 1 Credit Fall
Learning skills of advanced slope and cross-country skiing.

P.E. 211 Fundamentals of Sports — (0+2) Volleyball and Soccer 1 Credit Fall
Skills, rules, strategies, terminology of Volleyball and Soccer.

P.E. 212 Fundamentals of Sports — (0+2) Recreational Activities 1 Credit Spring
Skills, rules, strategies, terminology of such activities as archery, bowling, table tennis and shuffleboard.

P.E. 213 Fundamentals of Sports—Swimming (0+2) 1 Credit Fall
Skills, techniques, terminology of basic strokes; instruction in water safety and accident prevention; a preparatory course for P.E. 401.

P.E. 214 Fundamentals of Sports—Skiing (0+2) 1 Credit Spring
Skills, techniques, terminology of alpine type and cross-country skiing. Methods of instruction.

P.E. 215 Fundamentals of Sports — (0+2) 1 Credit Fall
Tumbling and Gymnastics (Men)
Skills, techniques, terminology of tumbling and gymnastics.

P.E. 216 Fundamentals of Sports—Rhythms (0+2) 1 Credit Spring
Skills, terminology and basic patterns of movement.

P.E. 217 Fundamentals of Sports — (0+2) 1 Credit Fall
Tumbling & Apparatus Gymnastics (Women)
Instruction in basic skills and techniques of apparatus gymnastics: Training and practices in tumbling, free exercises, uneven bars, balance beam and trampoline.

P.E. 301 Techniques in Physical Education (2+1) 2 Credits Fall
Basketball (Men)

Methods of coaching and training basketball teams; strategy, methods, and psychology of offense and defense.

P.E. 302 Techniques in Physical Education (2+1) 2 Credits Spring
Track and Field

Methods and strategy of coaching track and field; form, technique and training for events; organization and conduct of meets; construction, assembly and use of equipment.

P.E. 303 Techniques in Physical Education (2+1) 2 Credits Fall
Team Sports (Women)

Methods and practices, analysis of skills and progressions for selected team sports for women.

P.E. 308 Physical Education for the (2+3) 3 Credits Spring
Elementary School
 (Same as Ed. 308)

Philosophy, source materials, games, rhythmic, group activities and program planning; participation required to gain skills and techniques of teaching activities for elementary grade children. *Prerequisite: Ed. 313 and prerequisites thereto.*

P.E. 311 Principles of Physical Education (4+0) 4 Credits Fall

Basic principles and philosophy of physical education; its relation to general education; biological, sociological, and psychological bases.

P.E. 317 Senior Life Saving (0+3) 1 Credit Fall

Instruction in basic skills and techniques of life saving; personal safety skills, non-swimming assists, swimming assists, approaches and carries, body recovery, releases, equipment rescue, lifts, carries, and let-downs, and resuscitation. *Prerequisite: P.E. 207 or demonstrated swimming skill and water agility.*

P.E. 331 Sports Officiating (1+3) 2 Credits Fall

Ethics of sports officiating; mastery, interpretation and application of sports rules; laboratory consists of game officiating in the intramural program.

P.E. 358 History of Physical Education (3+0) 3 Credits Spring

The position of physical education in successive societies since primitive man, with emphasis on its relation to general education.

P.E. 400 Techniques in Physical Education (2+1) 2 Credits Spring
Tumbling and Gymnastics

Methods and practice in teaching tumbling and gymnastics. *Prerequisite: P.E. 215 or P.E. 217.*

P.E. 401 Techniques in Physical Education (2+1) 2 Credits Fall
Aquatics and Rhythms

Methods and materials, techniques and practice in teaching aquatics and rhythms. *Prerequisite: P.E. 213 and P.E. 216.*

P.E. 425 Organization and Administration of (3+0) 3 Credits Fall
Physical Education

Philosophy, methodology and problems of planning, organizing and directing the total physical education program at the secondary school level.

P.E. 440 Prevention and Care of Athletic 2 Credits Spring
Injuries (2+1)

Athletic injuries; practical and theoretical aspects of taping, bandaging and massage; physical therapeutic procedures.

P.E. 493	Special Topics	Credits Arr.	Fall
494		Credits Arr.	Spring

Individual study of chosen topic in health, physical education or recreation. Approved by the department and directed by a selected staff member.

PHYSICS

Phys. 103	College Physics (4+3)	4 Credits	Fall
104		4 Credits	Spring

Unified classical and modern physics for majors in the arts, biological sciences and education. *Prerequisite: High school algebra and geometry.*

Phys. 111	General Physics (2+3)	3 Credits	Fall
112		3 Credits	Spring

Mechanics, conservation laws, statics, oscillations, gravitation, fluids, sound and heat. Identical with E.S. 111-112.

Phys. 211	General Physics (3+3)	4 Credits	Fall
212		4 Credits	Spring

Thermodynamics and kinetic theory, electricity and magnetism, electromagnetic oscillations, waves and propagation, optics, quantum physics. *Prerequisite: Math. 102, Phys. 112 or E. S. 112, credit or registration in Math. 201 (Fall), Math 202 (Spring).*

Phys. 275	Astronomy (3+0)	3 Credits	Fall
276		3 Credits	Spring

Science elective for the general student. *Fall:* Stellar astronomy. Nature of radiation, physical properties and distribution of stars, galactic structure and cosmology. *Spring:* The solar system, laws of motion, the earth, the moon, planets, comets and meteors, cosmogony. Evening demonstrations both semesters. *Prerequisite: Sophomore standing. Phys. 275 not required for 276.*

Phys. 280	Shop Technique (0+3)	1 Credit	Fall or Spring
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Elements of machine tool operations, welding, soldering, glass blowing, high vacuum technique. Rudiments of apparatus construction. Shop project. Enrollment limited. *Prerequisite: Permission of instructor.*

Phys. 281	Astronomy Laboratory (0+3)	1 Credit	Fall
282		1 Credit	Spring

Laboratory experiments in gravitation, geometrical optics, physical optics, radiometry, photoelectricity, spectrophotometry and spectroscopy illustrating and supplementing. *Phys. 275-276. Prerequisite: Sophomore standing, Phys. 281 not required for 282.*

Phys. 301	Applied Physics (2+3)	3 Credits	Fall
302		3 Credits	Spring

Applied physics for majors in the arts, biological sciences, and education. Electronics, atomic structure and spectra, nuclear structure and reactions, radioactivity, tracer techniques, nuclear power. *Prerequisite: Phys. 104, Math. 102.*

Phys. 311	Classical Physics (4+0)	4 Credits	Fall
312		4 Credits	Spring

Selected topics from mechanics, thermodynamics, kinetic gas theory, statistical mechanics, acoustics, geometric and physical optics. *Prerequisite: Phys. 212, Math. 202, or permission of instructor.*

Phys. 331 Electricity and Magnetism (3+0) 3 Credits Spring
332 3 Credits Fall

Electrostatics, dielectrics, magnetostatics, magnetic materials, electromagnetism, Maxwell's equations, plane electromagnetic waves, radiation, selected topics from circuit theory and electronics. *Prerequisite: Phys. 212, Math. 202.*

Phys. 361 General Geophysics (3+0) 3 Credits Fall
362 3 Credits Spring

Introduction to basic geophysics including terrestrial electricity and magnetism, meteorology and seismology, geodesy and volcanology, glaciology, oceanography and tectonophysics. *Prerequisites: Junior standing. Phys. 104 or 212, Math. 102, one semester of Geology. Offered as demand warrants.*

Phys. 381 Physics Laboratory Credits Arranged Fall
382 Credits Arranged Spring

Laboratory experiments illustrating and supplementing Phys. 311-312, and Phys. 331-332. Enrollment limited. *Prerequisite: Permission of Instructor.*

Phys. 411 Modern Physics (3+0) 3-4 Credits Fall
412 3-4 Credits Spring

Relatively, elementary particles, atomic structure, x-rays, solid state physics, nuclear structure and reactions. Engineering majors take the 3 credits lecture course only, physics majors are required to take a supplementary 1 credit reading course. *Prerequisite: Physics 212, 332, Math. 302.*

Phys. 445 Solid State Physics (3+0) 3 Credits Fall

Theory of matter in the solid state, especially semiconductors. *Prerequisite: Physics 212, Math. 202. Offered as demand warrants.*

Phys. 455 Atomic and Nuclear Physics (3+0) 3 Credits Fall

Radioactivity, counters, nuclear reactions, neutron physics, nuclear physics, nuclear fission, cosmic rays. *Prerequisite: Phys. 212, Math. 202. Offered as demand warrants.*

Phys. 460 Geophysical Prospecting (2+3) 3 Credits Fall or Spring

Basic methods in geophysical exploration and measurements, gravimetric, seismic, electrical magnetic and radioactive. *Prerequisite: Phys. 212, Geol. 101, 102, and Math. 101. Offered as demand warrants.*

Phys. 465 Meteorology (3+0) 3 Credits Fall or Spring

Instruments and observations. Introduction to mechanics and thermodynamics of the atmosphere. Weather analysis and forecasting. *Prerequisite: Phys. 104 or 212, Math. 102. Offered as demand warrants.*

Phys. 470 Astronautics (3+0) 3 Credits Fall or Spring

Principles of astronomy, foundations of mechanics, and dynamics of space flight. *Prerequisite: Phys. 212, Math. 202. Offered as demand warrants.*

Phys. 475 Astrophysics (3+) 3 Credits Fall or Spring

Introduction to stellar spectroscopy, atomic theory and astrophysics, stellar luminosities, luminosities, atmospheres and interior, energy production and evolution of the stars. *Admission by arrangement. Offered as demand warrants.*

Phys. 481 Advanced Physics Laboratory Credits Arranged Fall
482 Credits Arranged Spring

Laboratory experiments illustrating and supplementing Phys. 411, 412, 445, 455, 475. Enrollment limited. *Prerequisite: Permission of instructor.*

Phys. 485	Experimental Physics	Credits Arranged	Fall
486		Credits Arranged	Spring

Senior projects in experimental physics. Enrollment limited. *Prerequisite: Senior Standing and permission of instructor.*

Phys. 491	Physics Seminar	Credits Arranged	Spring
492		Credits Arranged	Fall

Seminar courses in various topics selected according to needs and interest of students. Primarily for physics majors. *Prerequisite: Permission of Instructor.*

Phys. 493	Special Topics	Credits Arranged	Fall
494		Credits Arranged	Spring

Various subjects. *Admission by arrangement.*

Phys. 611	Theoretical Physics (3+0)	3 Credits	Fall
612		3 Credits	Spring

Fundamentals of mathematical physics with emphasis on problem solving; analytical mechanics, power series; vibrating systems; Fourier analysis; hydrodynamics, vector analysis; electromagnetism, complex analysis, wave optics, wave mechanics, matrices, perturbation theory; atomic structure, statistical physics, asymptotic expansions. *Admission by arrangement.*

Phys. 621	Classical Mechanics (3+0)	3 Credits	Fall or Spring
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Lagrange's equations, two-body problem, rigid body motion, special relativity, canonical equations, transformations theory and Hamilton-Jacobi method. *Admission by arrangement.*

Phys. 622	Statistical Mechanics (3+0)	3 Credits	Fall
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Classical and quantum statistics of independent particles, ensemble theory, applications. *Admission by arrangement.*

Phys. 625	Hydrodynamics (3+0)	3 Credits	Fall or Spring
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Equations of motion, irrotational motion of perfect fluid, motion of solids through fluids, vortex motion, waves, viscosity, turbulent flow. Compressible fluids. *Admission by arrangement. Offered as demand warrants.*

Phys. 626	Magnetohydrodynamics (3+0)	3 Credits	Fall or Spring
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Fundamental equations of magnetohydrodynamics, magnetohydrodynamic waves. Invariants of the motion of a charged particle in a magnetic field. Dynamics of a plasma, plasma waves. *Admission by arrangement. Offered as demand warrants.*

Phys. 631	Electromagnetic Theory (3+0)	3 Credits	Fall
632		3 Credits	Spring

Electrostatics, magnetostatics, Maxwell's equations, potentials, Lorentz equations, field energy, gauge conditions, retarded potentials, waves, radiation, tensor formulations, non-Maxwellian electrodynamics. *Admission by arrangement.*

Phys. 683	Experimental Electronics	Credits Arranged	Fall
684		Credits Arranged	Spring

Advanced work in experimental electronics, in particular low noise receivers; design, construction and stabilization of parametric and tunnel diode devices. *Admission by arrangement. Offered as demand warrants.*

Phys. 685	Experimental Physics	Credits Arranged	Fall
686		Credits Arranged	Spring

Advanced work in experimental physics. *Admission by arrangement. Offered as demand warrants.*

Phys. 690	Colloquium	0 Credits	Fall or Spring
Phys. 691	Seminar	Credits Arranged	Fall
692		Credits Arranged	Spring

Various topics. *Admission by arrangement.*

Phys. 693	Special Topics	Credits Arranged	Fall
694		Credits Arranged	Spring

Various subjects. *Admission by arrangement.*

Phys. 697	Thesis	Credits Arranged	Fall
698		Credits Arranged	Spring

Phys. 700	Review of Physics	Credits Arr.	Fall or Spring
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A reading course in theoretical physics to review and unify from an advanced standpoint the material of the basic physics courses. Primarily for advanced students. *Admission by arrangement. Offered as demand warrants.*

Phys. 710	Mathematical Physics (3+0)	3 Credits	Fall or Spring
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Linear spaces, operator theory, generalized functions, variational methods in theoretical physics. *Prerequisite: Math. 612 or permission of instructor. Offered as demand warrants.*

Phys. 720	Relativity (3+0)	3 Credits	Fall or Spring
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Origins, special theory, mechanics and electrodynamics, tensors, gravitational field equations and their solutions; particles in general relativity, cosmology; extensions to unified field theories. *Admission by arrangement. Offered as demand warrants.*

Phys. 770	Theoretical Astrophysics (3+0)	3 Credits	Fall or Spring
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Radiative transfer and stellar hydrodynamics; theory of continuous and line spectrum from stellar atmospheres; solar photosphere, chromosphere and corona. *Admission by arrangement. Offered as demand warrants.*

Phys. 791	Seminar	Credits Arranged	Fall
792		Credits Arranged	Spring

Various subjects. *Admission by arrangement.*

Phys. 797	Dissertation	Credits Arranged	Fall
798		Credits Arranged	Spring

POLITICAL SCIENCE

P.S. 101	American Government (3+0)	3 Credits	Fall
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U.S. Constitution and its philosophy; evolution of the branches of government; political process in American government; and contemporary political issues.

P.S. 102	Introduction to Political Science (3+0)	3 Credits	Spring
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The political process and its examination. Goals, methods, and levels of government.

P.S. 193	Special Topics	Credits Arranged	Fall
194		Credits Arranged	Spring

P.S. 201	Comparative Politics: The Political Process (3+0)	3 Credits	Fall
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Different constitutional molds in which the political process operates; the effect on political processes of modern techniques; and emerging political forms.

- P.S. 202 Comparative Politics: Case Studies (3+0) 3 Credits Spring**
Case studies from selected nations grouped into four classes; Western Democracies, Russian Communism, Chinese Communism, and "emerging" nations.
- P.S. 211 State and Local Government (3+0) 3 Credits Fall or Spring**
Organization and politics of State and local government in the United States; the Alaskan Constitution; and problems of statehood in Alaska. *Prerequisite: P.S. 101.*
- P.S. 293 Special Topics Credits Arranged Fall**
294 Special Topics Credits Arranged Spring
- P.S. 301 Public Administration (3+0) 3 Credits Fall or Spring**
Techniques and problems of administering public policy. The changing role of the Executive Branch in the political process. *Prerequisite: P.S. 101.*
- P.S. 321 International Affairs (3+0) 3 Credits Fall**
Development of internationalism in relation to nationalism and imperialism; attempts at world government. The League of Nations and the United Nations. International Law.
- P.S. 322 International Law and Organization (3+0) 3 Credits Fall**
Development, structure, policies and problems of public international law and organizations. Accomplishments and limitations of universal and regional organizations and law.
- P.S. 393 Special Topics Credits Arranged Fall**
394 Credits Arranged Spring
- P.S. 401 Political Behavior (3+0) 3 Credits Fall**
402 3 Credits Spring
Behavior of political organizations, parties, groups, politicians and individual citizens. *Prerequisite: P.S. 101 and 102.*
- P.S. 411 Political Theory (3+0) 3 Credits Fall**
412 3 Credits Spring
Ancient, classical, medieval and modern political concepts, and their effects on political behavior.
- P.S. 415 Recent Political Thought (3+0) 3 Credits Fall or Spring**
A discussion of the contributions of modern thinkers to political theory.
- P.S. 434 American Constitution (3+0) 3 Credits Fall or Spring**
Role of the judiciary in the American political system viewed both historically and through analysis of leading cases. *Prerequisite: P.S. 101.*
- P.S. 485 Seminar in Contemporary International Relations (3+0) 3 Credits Fall or Spring**
Theory of international conflict. Prerequisites for international political cooperation. The effect on international affairs of advances in military science. *Prerequisite: P.S. 321.*
- P.S. 491 Seminar Credits Arranged Fall**
492 Credits Arranged Spring
- P.S. 493 Special Topics Credits Arranged Fall**
494 Credits Arranged Spring

PSYCHOLOGY

Psy. 101 Introduction to Psychology (3+0) 3 Credits Fall or Spring

Fundamentals of general psychology and human behavior.

Psy. 102 Introduction to Psychology (3+0) 3 Credits Spring

The principal areas of general psychology. A continuation of Psy. 101. *Prerequisite: Psy. 101.*

Psy. 205 Statistics for Behavioral Sciences (3+0) 3 Credits Fall or Spring

Introduction to the purposes and procedures of statistics; calculating methods for the description of groups (data reduction) and for simple inferences about groups and differences between group means. *Requires high school algebra.*

Psy. 209 Social Psychology (3+0) 3 Credits Fall

Social influences on human behavior. *Prerequisite: 6 hours in Psy. and/or Soc.*

Psy. 213 Experimental Psychology (2+3) 3 Credits Fall

Supervised experiments in sensory psychology and animal and human learning. Data collection and analysis; report writing. *Prerequisite: Psy. 101 and 102, and Psy. 205.*

Psy. 214 Experimental Psychology (2+3) 3 Credits Spring

Continuation of Psy. 213. Experimental design and experiments in interpersonal relations and psychodynamics. *Prerequisite: Psy. 213.*

Psy. 252 Psychology of Adolescence (2+3) 3 Credits Spring

Mental, emotional, social, and physical development patterns during the adolescent years. Laboratory arranged for observations of adolescents in a variety of settings including public schools. *Prerequisites: Psy. 101, 45 collegiate credits, and permission of instructor.*

Psy. 303 Industrial Psychology (3+0) 3 Credits Fall

Job and worker analysis, selection, training, fatigue, worker adjustment, morale, labor-management relations. *Prerequisite: Psy. 101 and 102 or permission.*

Psy. 304 Abnormal Psychology (3+0) 3 Credits Spring

Abnormalities of human behavior. *Prerequisite: Psy. 101 and 102.*

Psy. 305 Child Development (2+9) 5 Credits Fall & Spring
(Same as H.E. 305)

Theory and laboratory of human mental, emotional, social, and physical development. *Prerequisite: Psy. 101, 45 collegiate credits, and permission of instructor.*

Psy. 312 Comparative and Physiological Psychology (3+0) 3 Credits Spring

Neural and hormonal basis of behavior; evolution of sensory, motor, and cerebral systems; inter-species comparisons; current research methods in these areas. *Prerequisite: Psy. 101 and 102, and Biol. 105 and 106.*

Psy. 321 Psychological Testing (3+0) 3 Credits Spring

Standardized psychological tests in various applied areas—administration, scoring, and interpretation of established tests. *Prerequisite: Psy. 101 and 102.*

Psy. 392 Perception in Human Behavior (3+0) 3 Credits Spring

Physiological, developmental, and social effects on interpretation of sensory processes. *Prerequisite: Psy. 101 and 102.*

Psy. 406 Theories of Personality (3+0) 3 Credits Spring

Current psychological theories, with a critical examination of the different approaches used in theory construction. *Admission by arrangement.*

Psy. 421 Psychology of Learning (3+0) 3 Credits Fall

Theories of human and animal learning. *Prerequisite: Psy. 101 and 102.*

Psy. 434 Social Science Research Methods (3+0) 3 Credits Spring
(Same as Soc. 434)

Techniques of social research—sampling, questionnaire construction, interviewing and data analysis in surveys; field and laboratory experiments; attitude scaling. *Prerequisites: Psy. 101 and 102, or Soc. 101 and 102.*

Psy. 491 Seminar in Human Behavior (2+0) 2 Credits Fall
(Same as Soc. 491)

Integrated behavioral approach emphasizing the major sociological and psychological theories with special attention to current literature. *Prerequisite: Major in sociology or psychology or permission of instructor.*

Psy. 493 Special Topics Credits Arr. Fall
494 Credits Arr. Spring

Various subjects. *Admission by arrangement.*

RUSSIAN

Russ. 101 Elementary Russian (5+0) 5 Credits Fall
102 5 Credits Spring

Designed to teach students to hear, speak, read and write Russian. Oral practice is emphasized.

Russ. 150 Scientific Russian (3+0) 3 Credits Spring

Rapid acquisition of a reading knowledge of scientific Russian. *Offered as demand warrants.*

Russ. 201 Intermediate Russian (3+0) 3 Credits Spring
202 3 Credits Fall

A continuation of Russian 102. Increasing emphasis on reading ability and cultural materials. Conducted in Russian. *Prerequisite: Russian 102 or 2 years of high school Russian.*

Russ. 321 Studies in Russian Literature 3 Credits Fall
322 3 Credits Spring

Choice of authors, genres, or periods of Russian literature for intensive study. *Prerequisite: Russian 202 or equivalent.* Students may repeat course for credit when topic varies.

Russ. 493 Special Topics Credits Arr. Fall
494 Credits Arr. Spring

Various subjects in Russian, for advanced students. *Admission by arrangement. Offered as demand warrants.*

SOCIOLOGY

Soc. 101 Introduction to Sociology (3+0) 3 Credits Fall or Spring
102 3 Credits Fall or Spring

Man's relationship to the society in which he lives.

Soc. 106 Social Welfare (3+0) 3 Credits Spring

Functions and development of modern social welfare and the distinctive features of the profession.

Soc. 201 Social Problems (3+0) 3 Credits Fall

Problems of contemporary society; analysis of factors giving rise to them. *Prerequisite: Soc. 101 and 102.*

Soc. 205 Group Processes in Modern Society (3+0) 3 Credits Fall

Formation, structure and functioning of groups; group processes and group products; implications of various research techniques. *Prerequisites: Soc. 101 and 102.*

Soc. 207 Population (3+0) 3 Credits Fall

Analysis of world populations; growth and decline patterns, migratory trends and ecology; worldwide implications to current population growth; critical review of major theoretical contributions with introduction to demographic methods. *Prerequisite: Soc. 101 and 102.*

Soc. 209 Urban Sociology (3+0) 3 Credits Fall

Growth and development of urban communities with reference to migration patterns, differentiation of functions, ecological patterns of land use, social control secondary group associations of metropolitan magnitude. *Prerequisite: Soc. 101 and 102.*

Soc. 232 Family and Society (3+0) 3 Credits Spring

The family as a social institution; its dynamics in the socialization process; social change and social values. *Prerequisite: Soc. 101 and 102.*

Soc. 302 Minority and Ethnic Groups (3+0) 3 Credits Spring

Social stratification; the status of the chief minorities in the continental United States; development and effects of selective immigration, assimilationism, racism. *Prerequisite: Soc. 101 and 102.*

Soc. 304 Culture and Personality (3+0) 3 Credits Spring

Theories of relation of variation in personality to culture and group life in primitive and modern societies; influence of the social role on behavior. *Prerequisite: Soc. 101 and 102.*

Soc. 306 Community and Ecology (3+0) 3 Credits Spring

Modern, industrial, centralized society, and institutional structure of community life—political, economic, religious—with reference to internal structure and external sources of control and domination. *Prerequisite: Soc. 101 and 102.*

Soc. 308 Field Practice Community Service Laboratory Credits Arr. Fall or Spring

Individual programs of self-help projects dealing with community needs and resources; theoretical analysis of experienced situations; learning through laboratory method. *Prerequisite: Soc. 101, 102, 106, 205, and by arrangement.*

Soc. 321 Introduction to Social Work (3+0) 3 Credits Fall

Scope and methods of social work with its specialized treatment and process areas. *Prerequisite: Soc. 101 and Psy. 101.*

Soc. 322 Introduction to Social Work (3+0) 3 Credits Spring
 Historical and philosophical development of social work as an institution and profession in the United States and abroad. *Prerequisite: Soc. 101 and Psy. 101.*

Soc. 345 Sociology of Education (3+0) 3 Credits Fall
 (Same as Ed. 345)

Impact of culture on schools. Examination of contemporary social trends and relationships among church, school government and family. *Prerequisite: Soc. 101.*

Soc. 401 Sociology of Deviant Behavior (3+0) 3 Credits Fall
 Crime and criminality in American culture. *Prerequisite: Soc. 101 and 102.*

Soc. 404 Sociology of Adolescence (3+0) 3 Credits Spring
 Motivations, attitudes, beliefs, behavior of this age group, including delinquent or norm-violating behavior. *Prerequisite: Soc. 101 and 102. Offered in alternate years.*

Soc. 405 Social Change (3+0) 3 Credits Fall
 Social change in long-time perspective, with emphasis on social movements. *Prerequisite: Soc. 101 and 102.*

Soc. 410 Sociology Theory (3+0) 3 Credits Spring
 Major sociological theories and theorists of Western civilization; review of important contributions and approaches of various "national schools" with emphasis on current American and European trends.

Soc. 434 Social Science Research Methods (3+0) 3 Credits Spring
 (Same as Psy. 434)
 Techniques of social research—sampling, questionnaire construction, interviewing and data analysis in surveys; field and laboratory experiments; attitude scaling. *Prerequisite: Psy. 101 and 102, or Soc. 101 and 102.*

Soc. 491 Seminar in Human Behavior (2+0) 2 Credits Fall
 (Same as Psy. 491)
 Integrated behavioral approach emphasizing the major sociological and psychological theories with special attention to current literature. *Prerequisite: Major in sociology or psychology, or permission of instructor.*

Soc. 493 Special Topics Credits Arr. Fall
494 Credits Arr. Spring
 Various subjects. *Admission by arrangement.*

SPANISH

Span. 101 Elementary Spanish (5+0) 5 Credits Fall
102 5 Credits Spring

Designed to teach students to hear, speak, read and write Spanish; oral practice emphasized.

Span. 201 Intermediate Spanish (3+0) 3 Credits Fall
202 3 Credits Spring

Continuation of Spanish 102. Increasing emphasis on reading ability and cultural material; conducted in Spanish. *Prerequisite: Spanish 102 or 2 years of high school Spanish.*

Span. 321	Studies in Spanish Literature (3+0)	3 Credits	Fall
322		3 Credits	Spring

Choice of authors, genres, or periods of Spanish literature for intensive study.

Prerequisite: Spanish 202 or equivalent. Offered as demand warrants. Students may repeat course for credit when topic varies.

Span. 493	Special Topics	Credits Arr.	Fall
494		Credits Arr.	Spring

Various subjects for advanced students. Admission by arrangement *Offered as demand warrants.*

SPEECH

Sp. 68	Elementary Public Speaking I (2+0)	2 Credits	Fall or Spring
	Elementary speech composition.		

Sp. 69	Elementary Public Speaking II (2+0)	2 Credits	Fall or Spring
	Elementary speech composition.		

Sp. 111	Public Speaking (1+2)	2 Credits	Fall or Spring
	Fundamentals of oral communication. Theory and practice of exposition and persuasion.		

Sp. 212	Public Speaking II (2+0)	2 Credits	Fall or Spring
	Theory and practice of rhetoric and public address. Basic works from Plato to Quintilian. Practice in advanced forms of exposition and persuasion.		

Sp. 215	Debate Practicum (0+2)	1 Credit	Fall or Spring
	Training in practical debate situations. Participation in Debating Society required. May be repeated for a maximum of six credits. Students wishing to take this course and Sp. 314, Argumentation and Debate, may enroll in the latter with the consent of the Instructor and may not receive more than 8 units of credit for any combination of the two courses.		

Sp. 221	Introduction to the Theater (3+0)	3 Credits	Fall or Spring
	History of theater with emphasis on dramatic form, architecture and standards of criticism.		

Sp. 223	Acting I (1+4)	1-3 Credits	Fall or Spring
	Principles of acting developed through pantomime, improvisation and sense-memory; participation as an actor or technician in one Drama Workshop production required. May be repeated for a maximum of six credits.* <i>Prerequisite: Sp. 221 or by arrangement.</i>		

Sp. 231	Introduction to Broadcasting (3+0)	3 Credits	Fall or Spring
	A survey of radio and television, with emphasis on the history, financing, regulation, and operation of the broadcasting industry.		

Sp. 237	Announcing (1+2)	2 Credits	Fall or Spring
	Microphone techniques, role of the announcer in broadcasting. Fundamentals of announcing; their practical application. <i>Prerequisite: Sp. 111 or by arrangement.</i>		

Sp. 239	Radio Operations (0+3)	1 Credit	Fall and Spring
	Training in practical radio operations. Participation on KUAC staff required. May be repeated for a maximum of four credits.		

Sp. 313	Argumentation and Debate (1+2)	2 Credits	Fall
	Theory of argumentation and debate applied to contemporary issues. Practice in briefing and presenting arguments, testing evidence and detecting fallacies.		

- Sp. 314 Discussion (1+2)** 2 Credits Spring
Nature and operation of discussion groups; use of evidence, reasoning, reflective thinking, group psychology, participant and leader behavior.
- Sp. 315 Phonetics (2+0)** 2 Credits Fall or Spring
Use of the International Phonetic Alphabet; assimilation and dialectal problems; use in acting, teaching, speech improvement. *Prerequisite: Sp. 111 or by arrangement. Offered as demand warrants.*
- Sp. 316 Voice and Diction (1+2)** 2 Credits Fall
Development of fluency and clearness in the voice; study and practice to improve speech and eliminate faults of articulation and pronunciation; phrasing, inflection and emphasis, including individual analysis and tape recordings. *Prerequisite: Sp. 111 or by arrangement.*
- Sp. 317 Oral Interpretation (2+2)** 3 Credits Fall or Spring
Interpretative reading based on textual analysis of literary forms and careful study of principles of effective reading. *Prerequisite: Sp. 111 or by arrangement.*
- Sp. 323 Acting II (1+4)** 3 Credits Fall or Spring
Building a character; role study and performance of small scenes. Participation as an actor or technician in one Drama Workshop production required. *Prerequisite: Sp. 221, 223 or by arrangement.*
- Sp. 325 Theater Production (1+4)** 3 Credits Fall or Spring
Direction of short plays for Drama Lab. productions. Principles of makeup, lighting and production. *Prerequisite: Sp. 221, 223, or by arrangement.*
- Sp. 327 Makeup for Theater (1+2)** 2 Credits Fall or Spring
Theatrical makeup, designed for actors, teachers, director and other theater workers; makeup materials and use; straight and character makeup; illusory and plastic relief; national types; influence of lighting. (Students will spend approximately \$20.00 for materials.) *Offered as demand warrants.*
- Sp. 333 Writing for Radio and Television (3+0)** 3 Credits Fall or Spring
Preparation of announcements, interviews, music continuity, special events programs, documentaries, commentaries, news, and other basic radio and television continuity.
- Sp. 334 Radio-Television Advertising (2+3)** 3 Credits Fall or Spring
Academic approach to economics and standards of radio and television advertising. Special emphasis on ethical considerations involved in the preparation and presentation of commercial broadcast copy. *Prerequisite: Sp. 333 or by permission.*
- Sp. 335 Broadcast Production (2+3)** 3 Credits Fall or Spring
Use of studio equipment; radio-tv production techniques; radio-tv station organization; tape editing; sound effects; television directing.
- Sp. 341 Fundamentals of Speech Correction (2+0)** 2 Credits Fall
Understanding and aiding speech development in normal and speech defective children and adults; for parents, teachers and others concerned with speech problems. *Prerequisite: Sp. 111 or by arrangement.*
- Sp. 343 Clinical Methods in Speech Correction (2+2)** 3 Credits Spring
Administration of clinical tests of speech and application of principles of speech correction; supervised clinical practice. *Prerequisite: Sp. 111, 315, 341, or by arrangement.*
- Sp. 425 Directing (3+0)** 3 Credits Spring
Directorial analysis of a major dramatic work for public presentation. Limited to senior majors with 3.00 G.P.A. in Speech.

Sp. 433 Radio-Television News (2+4) 3 Credits Fall or Spring

Responsible news writing, editing, processing and delivery for the broadcast media. Special emphasis on ethical considerations in broadcast journalism. *Prerequisite: Sp. 333 and Jour. 201 or by permission.*

Sp. 493 Special Topics Credit Arr. Fall
494 Credit Arr. Spring

Various subjects. Admission by arrangement. *Offered as demand warrants.*

WILDLIFE MANAGEMENT

W.M. 304 Wildlife Management Principles (2+3) 3 Credits Fall

Economic, social, biological and other values of wildlife; basic principles of wildlife management and its integration with other land use practices; important wildlife resources of Alaska. *Prerequisites: Land Res. 101, Biol. 303.*

W.M. 325 Scientific Sampling (2+3) 3 Credits Fall

Sampling methods, including simple random, stratified and systematic; estimation procedures, including ratio and regression methods; special area and point sampling procedures; optimum allocation; special features of biological sampling. *Prerequisite: Math. 122 or 201, and Math. 204 or permission.*

W.M. 410 Wildlife Techniques (2+3) 3 Credits Spring

Field, laboratory and office techniques of collecting, analyzing, interpreting and presenting data and specimens. *Prerequisite: W.M. 304 or permission.*

W.M. 417 Wildlife Management—Forest and Tundra (2+0) 2 Credits Fall or Spring

Forest and tundra wildlife, with emphasis on game and fur species; correlation of wildlife management with forest and tundra land use practices. *Admission by arrangement. Offered as demand warrants.*

W.M. 419 Wildlife Management—Wetlands (2+0) 2 Credits Fall or Spring

Wetland wildlife with emphasis on game and fur species of fresh-water areas; correlation of wildlife management with wetland use practices. *Admission by arrangement. Offered as demand warrants.*

W.M. 423 Limnology (2+3) 3 Credits Fall

Physical, chemical, and biological characteristics of fresh waters, emphasizing ecological aspects important to fish and other organisms. *Prerequisites: Chem. 102, Biol. 105, 106, and 303 or by permission.*

W.M. 424 Ecology of Fishes (2+3) 3 Credits Spring

Ecology of fishes and current applications in sport and commercial fisheries. *Prerequisite: Biol. 326, W.M. 304, 421. Admission by arrangement.*

W.M. 426 The Analysis of Linearized Models (2+3) 3 Credits Spring

Analysis by methods of least squares of general linearized models, including those appropriate to various designs, including completely random, randomized completed block, incomplete block and latin square, and those for the analysis of variance and analysis of covariance. Matrix algebra appropriate to least squares. *Prerequisites: Math. 201 or 122, and 204.*

W.M. 491 Seminar (2+0) 1 Credit Spring
492 1 Credit Fall

Various topics in wildlife management. *Prerequisite: Senior standing in wildlife or by arrangement. Offered as demand warrants.*

W.M. 493	Special Topics (Arrange)	Credits Arr.	Fall
494		Credits Arr.	Spring

Various subjects studied principally through directed reading and discussions.
Admission by arrangement.

W.M. 611	Wildlife Field Trip	Credits Arr.	Fall
612		Credits Arr.	Spring

Trips to wildlife areas to acquaint students with principal animals of the State and problems involved in their management. *Admission by arrangement. Offered as demand warrants.*

W.M. 621	Vertebrate Population Analysis (1+3)	2 Credits	Fall
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Dynamics of vertebrate populations, with particular emphasis on the collection and interpretation of vital statistics of wild populations. *Admission by arrangement. Offered as demand warrants.*

W.M. 622	Environmental Analysis (2+3)	3 Credits	Spring
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Recognition, description and evaluation of factors in terrestrial environments. *Admission by arrangement. Offered as demand warrants.*

W.M. 624	Problems in Fisheries Management (2+0)	2 Credits	Spring
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Selected readings and discussions relating to major fisheries of the world, their problems, and the methods of attack on these problems. *Admission by arrangement. Offered as demand warrants.*

W.M. 691	Seminar (2+0)	1 Credit	Fall
692		1 Credit	Spring

Various topics in wildlife management; required of all graduate students. (Biol. 691, 692 may be substituted by permission of the major professor.)
Offered as demand warrants.

W.M. 693	Special Topics	Credit Arr.	Fall
694		Credit Arr.	Spring

Various subjects studied principally through directed reading and discussions.
Admission by arrangement.

W.M. 695	Research	Credit Arr.	Fall
696		Credit Arr.	Spring

Investigative work, either field or laboratory, on a problem of lesser scope than the thesis or supplementary to the thesis. *Admission by arrangement.*

W.M. 697	Thesis	Credit Arr.	Fall
698		Credit Arr.	Spring

Admission by arrangement.



University Computer Center is one of the most advanced of its kind in the country.

Discussion groups are an important aspect of each student's class work.





Registers

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The Regents of the University of Alaska are appointed by the Governor and are confirmed by the Legislature.

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 Iowa State College '19, B.S.; '22, M.S.; University of Alaska '59, D. Hum. (1925-1936, 1940-1959)

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 Williams College of Washington '21, A.B. and M.A.; '41 Ed.D.; University of Alaska '61, LL.D. (1952-1961)

DOROTHY H. NOVATNEY, *Professor of English, Emeritus*
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