

**University
of Alaska
Catalog
1971-72**

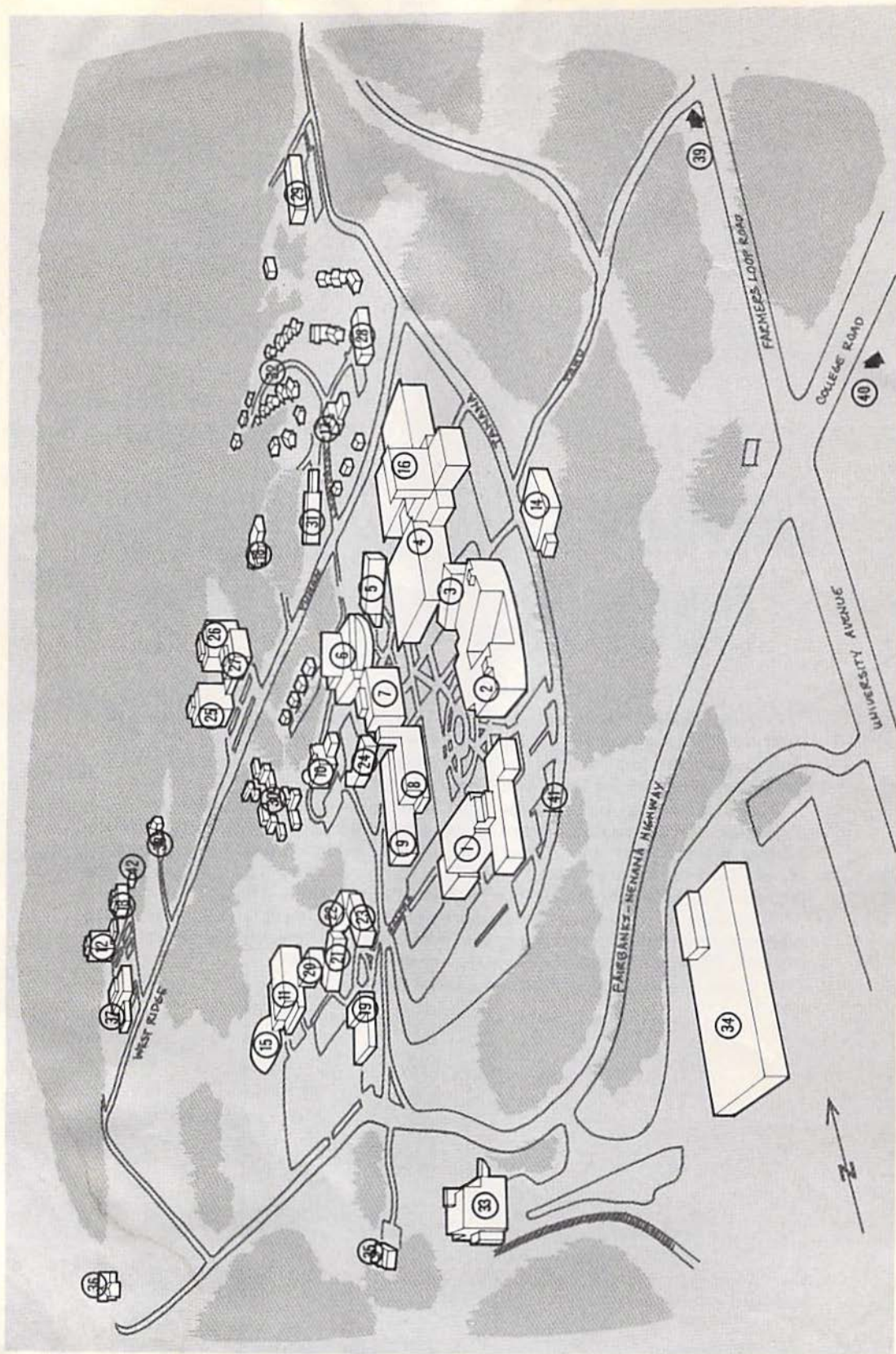
University of Alaska Catalog / 1971-72

These Eskimo Masks are part of the Eskimo Art Documentary completed in 1970 by Professor Ronald Senungetuk, Director, Extension Center in Arts and Crafts, under the joint auspices of the Alaska State Council on the Arts and the National Endowment for the Arts in Washington, D.C.

The ceremonial mask on the front cover is from the now extinct village of Andreafski. An abstraction of man, it was used in religious dances. The small snow bunting mask on the back cover with the sad, serious expression is from King Island. Both masks were made in the late 19th century and are now part of the permanent collection of the Sheldon Jackson Museum, Sitka, Alaska.

Colored reproductions of the entire mask collection will be made available to museums, educational institutions, and public galleries through the Office of the Director, Division of Statewide Services, University of Alaska.

Color Photographs by Professor Charles Deehr.



KEY TO LOCATIONS

- (1) BUNNELL BUILDING — General administrative offices, classrooms, SCHAIBLE LECTURE HALL, Cooperative Extension Service
- (2) DUCKERING BUILDING — Classrooms; laboratories; College of Mathematics, Physical Sciences, and Engineering; College of Business, Economics, and Government; Institute of Marine Science; Institute of Arctic Environmental Engineering; Institute of Water Resources; Computer Center; State Highway Testing Laboratory.
- (3) BROOKS BUILDING — Classrooms, laboratories, College of Earth Sciences, and Mineral Industry, Mineral Industry Research Laboratory.
- (4) LIBRARY
- (5) CONSTITUTION HALL — (Student Union Building or SUB) — Visitor Information Center, Student Activities Office, Associated Students of the University of Alaska Office, snack bar and recreational facilities, bookstore, Alumni Services and Graduate Placement Office.
- (6) CAMPUS ACTIVITY CENTER — Under construction (see No. 5).
- (7) GENERAL CLASSROOM AND OFFICE BUILDING — Under construction.
- (8) UNIVERSITY MUSEUM — Northern Native Peoples, natural history, and Alaskan history, research collections and exhibits. Open to the public.
- (9) EIELSON BUILDING — Classrooms, laboratories, College of Behavioral Sciences and Education, Department of Evening Classes and Correspondence Study, Office of Summer Sessions.
- (10) CHAPMAN BUILDING — Science facilities.
- (11) PATTY BUILDING — Department of Health, Physical Education, and Recreation facilities and offices, including gym, pool, and rifle range; Reserve Officers Training Corps (ROTC).
- (12) ELVEY BUILDING — Geophysical Institute.
- (13) BIO SCIENCES BUILDING — Classrooms, laboratories, College of Biological Sciences and Renewable Resources, Institute of Arctic Biology, Alaska Cooperative Wildlife Research Unit.
- (14) FOREST SCIENCES LABORATORY — Institute of Northern Forestry of the U.S. Forest Service.
- (15) BELUGA (Dome) — Ice skating and hockey facilities.
- (16) FINE ARTS AND HUMANITIES COMPLEX — College of Arts and Letters, theater, recital hall, rehearsal hall, art studios and gallery, Arts and Crafts Center, music facilities, KUAC-FM, and television studios.
- (17) FIRE STATION
- (18) PRESIDENT'S RESIDENCE
- (19) UNIVERSITY COMMONS — Dining facility for residence hall students, (additional facility will be constructed near no. 26).
- (20) LATHROP HALL — Residence Hall.
- (21) STEVENS HALL — Residence Hall.
- (22) NERLAND HALL — Residence Hall.
- (23) MCINTOSH HALL — Residence Hall.
- (24) WICKERSHAM HALL — Residence Hall.
- (25) MOORE HALL — Residence Hall.
- (26) BARTLETT HALL — Residence Hall.
- (27) SKARLAND HALL — Residence Hall.
- (28) WALSH HALL — Residence Hall.
- (29) HARWOOD HALL — Married-student apartments.
- (30) MODULAR STUDENT HOUSING
- (31) STUART HALL — Faculty apartments.
- (32) FACULTY HOUSING
- (33) ATKINSON BUILDING — Power Plant.
- (34) SERVICES BUILDING — Maintenance facilities, State Division of Mines and Geology.
- (35) ALASKA RURAL SCHOOL PROJECT
- (36) COLLEGE FARM
- (37) ARCTIC WATER LABORATORY (U.S. Department of the Interior) and ARCTIC HEALTH RESEARCH CENTER (U.S. Department of Health, Education and Welfare).
- (38) U.S. COAST AND GEODETIC SURVEY — Observatory houses seismograph installation.
- (39) MUSK OX FARM — Station for musk ox domestication project, with viewing platform along Yankovich Road for visitors.
- (40) COLLEGE INN BUILDING — Institute of Social, Economic, and Government Research (second floor).
- (41) TOTEM POLE
- (42) GREENHOUSE



The "Beluga" rings with the crack of many a well hit puck during the hockey season.

1971-72 University Calendar

1971 Summer Session

Short Session	June 7-25
Regular Session	June 28-Aug. 6
Post-Session	Aug. 9-13
Special Nine Week Session	June 7-Aug. 6

1971 Fall Semester

Residence Halls Open	Wed., Sept. 1
General Faculty Convocation	9:30 a.m., Wed., Sept. 1
Faculty Meetings (Academic Colleges)	11:00 a.m., Wed., Sept. 1
Faculty Meetings (Departmental)	1:30 p.m., Wed., Sept. 1
Orientation and Guidance Testing for New Students	Thurs., & Fri., Sept. 2 & 3
Orientation and Counseling of Students by Advisors	Fri & Sat., Sept. 3 & 4
Labor Day	Mon., Sept. 6
Registration	Tues., Sept. 7
Instruction Begins	Wed., Sept. 8
Late Registration Closes	Wed., Sept. 22
Last Day to Make Up Incompletes	Wed., Oct. 20
Six Weeks Grade Reports	Wed., Oct. 20
Last Day for Student Initiated Withdrawals	Tues., Nov. 23
Thanksgiving Holiday	Thurs., Nov. 25
End of Instruction/Examinations	Wed., Dec. 22
Final Grades on File with Registrar	Noon, Thurs., Dec. 23
End of Fall Semester	Thurs., Dec. 23

1972 Spring Semester

Residence Halls Open	Thurs., Jan. 13
Orientation and Guidance Testing for New Students	Fri., Jan. 14
Orientation and Counseling of Students by Advisors	Sat., Jan. 15
Registration	Mon., Jan. 17
Instruction Begins	Tues., Jan. 18
Late Registration Closes	Tues., Feb. 1
Last Day to Make Up Incompletes	Tues., Feb. 29
Six Weeks Grade Reports	Tues., Feb. 29
Spring Recess . . . . .	.5 p.m., Wed., Mar. 29—8 a.m., Mon., April 3
Last Day for Student Initiated Withdrawals	Thurs., April 13
Last Day to Submit Graduate Thesis	Thurs., April 20
All Campus Day (no classes)	Fri., Apr. 21
Governor's Day (classes held)	Sat., May 6
End of Instruction/Examinations	Wed., May 10
Final Senior Grades on File with Registrar	9 a.m., Thurs., May 11
Final Grades on File with Registrar . . . . .	.5 p.m., Thurs., May 11
End of Spring Semester	Thurs., May 13
Commencement	Sun., May 14

1972 Summer Session

Short Session	June 5-23
Regular Session	June 26-Aug. 4
Post-Session	Aug. 7-11
Special Nine-Week Session	June 5-Aug. 11

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SOURCES OF INFORMATION

UNIVERSITY OF ALASKA

COLLEGE CAMPUS

Mailing Address	University of Alaska College, Alaska 99701
General Information	Executive Officer and Provost
Public Relations, News Service	Director, University Relations
Admissions and Residence Hall Applications	Director of Admissions and Registrar
Scholarships, Loans, Part-Time Employment	Head, Financial Aids
Extra Curricular Activities	Head, Student Activities
Student Housing	Head, Student Housing
Graduate Study	Vice President for Research and Advanced Study
Summer Sessions, Evening Classes, Correspondence Study	Dean, Division of Statewide Services
Short Courses, Conferences	Director, Division of Statewide Services
Alumni Association	Head, Alumni Services and Graduate Placement

SOUTHCENTRAL REGION

Provost
2651 Providence Avenue
Anchorage, Alaska, 99504

University of Alaska,
Anchorage (Senior College)
2651 Providence Avenue
Anchorage, Alaska 99504

Dean
Anchorage Community College
2533 Providence Dr.
Anchorage, Alaska 99504

Resident Director
Matanuska-Susitna Community College
Box 86
Palmer, Alaska 99645

Resident Director
Kenai Peninsula Community College
Box 657
Kenai, Alaska 99611

Resident Director
Kodiak Community College
Box 954
Kodiak, Alaska 99615

SOUTHEASTERN REGION

Provost
5th & Franklin St.
Juneau, Alaska 99801

University of Alaska, Juneau
5th & Franklin St.
Juneau, Alaska 99801

Resident Director
Ketchikan Community College
Box 358
Ketchikan, Alaska 99901

Resident Director
Juneau-Douglas Community College
Box 135
Auke Bay, Alaska 99821

Resident Director
Sitka Community College
Box 1090
Sitka, Alaska 99835

OFFICE OF PUBLIC SERVICE

Vice President for Public Service
University of Alaska
College, Alaska 99701

Extension Publications
Director, Cooperative Extension Service
University of Alaska
College, Alaska 99701



Christmas finds the College campus wrapped in a mantel of fluffy snow.



The University dates from July 4, 1915, when 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 land-grant college. 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.

HISTORY

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 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. Dr. William R. Wood became the University's fourth president at that time.

Today, in addition to the main campus located at College, Alaska, University facilities encompass seven community colleges and serve students at a number of military installations around the state.

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.

OBJECTIVES OF THE UNIVERSITY

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 that 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 curricula in mining engineering and geological engineering and five-year curricula 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 also is on the approved list of colleges and universities of the American Association of University Women.

The academic offerings of the University of Alaska, Anchorage, the University of Alaska, Juneau, and the community colleges are fully accredited (as a part of the University of Alaska) by the Northwest Association of Secondary and Higher Schools. Under the Alaska Enabling Act for community colleges, the University of Alaska, Anchorage, the University of Alaska, Juneau, and community colleges may teach courses normally taught by the University of Alaska. These courses meet the standards of teaching personnel and content of the University of Alaska and are under the administration and supervision of the University of Alaska.

TUITION

The tuition and fees listed below apply to all institutions in the University of Alaska system. In addition, each institution may also have other fees and expenses that the student will be required to pay.

	RESIDENT	NON-RESIDENT
Undergraduate Full-Time Students		
Non-Resident Tuition		\$ 150.00
University Registration Fee (12 or more credit hours)	\$ 100.00	100.00
Graduate Full-Time Students (Enrolled in 600 Level Courses)		
Non-Resident Tuition		\$ 150.00
University Registration Fee (12 or more credit hours)	\$ 150.00	150.00
Undergraduate Part-Time Students		
11 Credit Hours	\$ 110.00	\$ 235.00
10 Credit Hours	110.00	210.00
9 Credit Hours	110.00	185.00
8 Credit Hours	110.00	160.00
7 Credit Hours	110.00	135.00
Less than 7 Credit Hours — \$18.00 per credit hour		
Graduate Part-Time Students (600 Level Courses)		
11 Credit Hours	\$ 165.00	\$ 290.00
10 Credit Hours	165.00	265.00
9 Credit Hours	165.00	240.00
8 Credit Hours	165.00	215.00
7 Credit Hours	165.00	190.00
Less than 7 Credit Hours — \$27.00 per credit hour		

NOTE: When a combination of undergraduate and 600 level courses are taken, the full or part-time graduate University registration fee for the total number of hours taken, or a combination of undergraduate and graduate credit hour fees, whichever is lower, will be paid.

RESIDENCY

Alaskan residents as well as students from Hawaii, the Yukon Territory, and the Northwest Territories are exempt from a non-resident tuition fee. Alaskan residents are defined as persons 19 years of age or older who have established residence in Alaska for at least one year prior to the date set for

registration. The residence of those under 19 years of age is the residence of the parents or legal guardian as defined above.

MISCELLANEOUS FEES

Application Fee — A fee of \$10 shall be paid at the time an 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 for the first day, plus \$2 for each succeeding working day allowed for late registration.

Drop/Add Fee — A penalty fee of \$1 shall be paid for each course added or dropped after the third day following the scheduled registration date. The penalty fee will not be levied when changes are necessitated by University cancellation or re-scheduling of classes.

Examination Fee — For each examination taken for removal of an incomplete, clearance of an entrance deficiency credit by examination, a fee of \$15 shall be charged. For more than three credits, an additional charge of \$1 per credit hour shall be charged.

Late Placement and Guidance Test Fee — A charge of \$5 shall be made for a placement and guidance test taken at a time other than the scheduled time.

Transcript Fee — One certified transcript is issued free. A charge of \$1 shall be made for each additional transcript.

Graduate Placement Fee — If credentials are not filed before graduation, a \$10 charge is made for filing and one year of service. Thereafter, \$5 is charged for each year the file is used.

Graduate Extended Registration Fee — Graduate students extending registration from a previous semester must pay the graduate extended registration fee of \$27.00.

Program Plan Fee — The Registrar's Office will provide without charge one plan for a schedule of courses leading to a degree. A second program plan will be provided for a fee of \$5.

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, as certified by the department chairman. Fees for class lessons: \$15. Fees for private lessons: \$45. Practice room rental: \$7.50.

All charges, deposits, rent, and meal fees for the semester are due at the time of registration. Students should be prepared to pay the full amount of charges for the semester. Exceptions are limited to hardship cases where the student's financial resources only become available subsequent to the scheduled payment date. He must then complete an installment contract. When an installment contract is required, a request for special payment arrangements should be made in writing to the Office of Financial Aid one month prior to registration. Failure to submit the contract request in advance may result in a delay in the student's registration.

PAYMENT OF FEES

Students approved for installment contracts must pay a minimum of 50% (fifty percent) of the total semester's charges at registration and the balance in no more than two monthly payments within a sixty day period. The installment contract service fee is \$2.00 for the contract and \$2.00 for each additional payment. Delinquent payment of installments is subject to a \$2.00 fine for each occurrence.

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 or register for succeeding semesters. A student's registration may be suspended for failure to meet financial obligations.

Refunds of the University Fee, Tuition Fee and Music Course Fees shall be made to withdrawing students upon formal withdrawal by or for the student, according to the following schedule:

REFUNDS

Withdrawal prior to the sixth (6) day of instruction —
90% refund.

Withdrawal on or after the sixth day of instruction, but within 30 calendar days from the beginning of instruction — 50% refund.

Withdrawal after 30 calendar days from the beginning of instruction — no refund.

Health Service, Campus Activity Fee and miscellaneous fees shall not be subject to refund.

Students withdrawing under discipline forfeit all rights to the return of any portion of their fees.

Applications for refund may be refused unless they are made during the semester in which the fees apply.

Degrees

The University offers programs leading to the following:

Undergraduate Degrees

Associate of Arts, A.A.
Associate of Aviation Technology, A.A.T.
Associate of Computer Information Systems, A.C.I.S.
Associate of Electronics Technology, A.E.T.
Associate of Fisheries Technology, A.F.T.
Associate of Fire Science, A.F.S.
Associate of Materials Technology, A.M.T.
Associate of Mineral and Petroleum Technology, A.M.P.T.
Associate of Office Administration, A.O.A.
Bachelor of Arts, B.A.
Bachelor of Business Administration, B.B.A.
Bachelor of Education, B.Ed.
Bachelor of Music, B.Mus.
Bachelor of Science, B.S.

DEGREES OFFERED

Professional Degrees

Engineer of Mines, E.M.

Graduate Degrees

Master of Arts, M.A.
Master of Arts in Teaching, M.A.T.
Master of Business Administration, M.B.A.
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 Public Administration, M.P.A.
Master of Science, M.S.
Educational Specialist, Ed. S.
Doctor of Philosophy, Ph.D.

*For further information write to the Director, Juneau-Douglas Community College.

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.

GENERAL REQUIREMENTS FOR UNDERGRADUATE DEGREES

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. At least 15 semester hours of the final 30 semester hours for any associate degree must be earned at the University of Alaska. A maximum of 15 semester hours of work completed by correspondence may be accepted toward an associate degree.

GENERAL REQUIREMENTS FOR A.A. DEGREE

	Credits
English .....	.6
American Government or American History .....	.6
Speech .....	.2
At least six credits in any three of the following areas:	18
(a) humanities, (b) social studies, (c) natural science, (d) mathematics, (e) other.	
Major Specialty (See Degree Programs Section for specific requirements)	
20-30 Electives to bring total credits to 60.	

Major Specialties Available For A.A. Degree — Behavioral Sciences, Liberal Arts, Office Administration, Police Administration, Science, Vocational Arts.

REQUIREMENTS FOR A.A. WITH MAJOR IN SCIENCE

	Credits
A total of 60 credits required for graduation.	
I. General Education	
A. Specific Requirements	
Engl. 67, 68 or 111 and 211 or 213 .....	.6
Speech .....	.2
History of U.S. or American Government .....	.6
B. General Requirements	
Humanities .....	.6
Social Sciences .....	.6
Six credits in one of the following: .....	.6
Natural Science, Mathematics, or other.	

II. Major in Science

Courses used to meet the General Education requirements may not be used to meet the requirements of the major.

Math. 121-122, Math. 106-200 or equivalent .....	.8
A year's sequence course in Biology, Chemistry, Geology, or Physics, plus two semesters in area other than that chosen for sequence	14-16

Approved Science elective (may include courses in Mathematics or Applied Science such as Engineering, Wildlife Management, etc.) 4-6

For other associate degree requirements, see the Degree Programs Section.

All physically qualified men and women students under 24 years of age entering the University for the first time, must enroll in physical education or Basic Course, ROTC. This requirement of P.E. 100 for four courses or Basic Course, ROTC (see Military Science) should be completed during the first two years of attendance at the University.

BACHELOR'S DEGREES

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

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 baccalaureate 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 lapse of more than seven years.

Since English 211 and English 213 are primarily courses in writing, and are interchangeable, either one of them will satisfy the second half of the requirement in written communication for the baccalaureate degree. A student who has taken one of these courses before declaring a major in which the other course may be considered more appropriate, or a student who changes his major from a field in which one of these courses is considered more appropriate than the other, will not be required to take the other course.

GENERAL REQUIREMENTS FOR B.A. DEGREE

	Credits
English Composition and Literature, including Engl. 111 and 211 or 213	12
Foreign Language — two years of collegiate work in one language. 12 credits fulfill the requirement if all are above the 100 level	12-16
Social Science, including Hist. 101-102 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	12
Major Specialty — (See Degree Programs Section for specific requirements)	23-26
Minor Specialties — two of 12-18 credits each, or a second major to be approved by petition	23-24
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, Business Administration, Chemistry, Economics, English, French, Geography, Geology, German, History, Journalism, Linguistics, Mathematics, Music, Physics, Physical Education, Philosophy, Political Science, Psychology, Russian, Sociology, Spanish, Speech.

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, Physical Education, Political Science, Psychology, Russian, Sociology, Spanish, Speech.

GENERAL REQUIREMENTS FOR B.B.A. DEGREE

	Credits
English Composition and Literature: Engl. 111 and 211 or 213	9
Fund. of Oral Communication: Sp.C. 111	3
Behavioral Science: Psy. 101, Soc. 101	6
History (other than American or European)	3
Political Science: P.S. 101	3
Economics: Econ. 121, 122, 221	9
Mathematics: Math. 106, 110, 200	10
Natural Science	4
Military Science or Physical Education	4-6
Elective Credits	0-28
If general credits (i.e., credits other than business and advanced economics) exceed 78, then more than 130 total credits will be required for the degree.	

GENERAL REQUIREMENTS FOR B.S. DEGREE

	Credits
English Composition and Literature, including Engl. 111 and 211 or 213	12

Foreign Language	0-10
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. A foreign language is not required for engineering science majors.	
Social Science .....	.9
Mathematics .....	.8
Physics .....	.8
Chemistry or Biology .....	.8
Major Specialty (See Departmental Sections for specific requirements)	
Military Science or Physical Education	4-6
Departmental requirements, minor specialties, and/or electives to bring total credits to 130.	

Major Specialties Available For B.S. Degree — Anthropology, Biological Sciences, Chemistry, Civil Engineering, Electrical Engineering, Fisheries Biology, General Science, Geography, Geology, Geological Engineering, Home Economics, Mathematics, Mechanical Engineering, Medical Technology, Mining Engineering, Physics, Physical Education, Psychology, Sociology, Wildlife Management.

Minor Specialties Available For B.S. Degree — Refer to Degree Programs Section, since some B.S. degree programs do not require minor specialties.

GENERAL REQUIREMENTS FOR B.ED. DEGREE

For requirements for a B.Ed. in Elementary Education, see page 124.
For requirements for B.Ed. in Secondary Education, see page 125.

GENERAL REQUIREMENTS FOR B.MUS. DEGREE

For requirements for a B.Mus. degree, see page 167.

For specific degree requirements see Degree Programs Section.

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.

GENERAL REQUIREMENTS FOR GRADUATE STUDY

MASTER'S DEGREE

As will be seen under departmental listings, programs leading to master's degrees are offered in the areas of anthropology, biology, botany, business administration, chemistry, civil engineering, counseling psychology, creative writing, environmental health engineering, education, electrical engineering, engineering management, English, fisheries biology, French, geology, geophysics, history, mathematics, mechanical engineering, mineral industry management, mineral preparation engineering, physics, public administration, 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 at the College campus or at the University of Alaska, Anchorage or Juneau. The completed form, official transcripts of all previous college or university work and letters of recommendation should be returned to that office.

In addition, programs leading to master's degrees may be arranged on request in certain aspects of other subjects; for example, arctic engineering, economics, land resources, 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.

Several cross-discipline master's degrees are offered through cooperating departments. For example, the Master of Arts in Teaching is offered with emphasis in the following disciplines: biology, chemistry, elementary education, English, French, geology, history, mathematics and physics; the Master of Science in general science is offered with emphasis in biology, chemistry, geology, mathematics and physics; the Master of Science is offered in oceanography and ocean engineering. Students interested in obtaining more information about these degrees and their requirements should also write to the Vice-President for Research and Advanced Study.

In general, a student may be admitted to graduate status 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 30 semester credits, of which a maximum of 12 may be devoted to the thesis. At least nine semester credits, in addition to those earned for the thesis, must be at the graduate 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 toward 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 eight credits of graduate study at the University of Alaska; 2) demonstrated a reading ability of a foreign language, if required; 3) received approval of the provisional title of his thesis, if a thesis is required, and of his program of studies by the dean, if he is enrolled in a college, or by the Vice-President for Research and Advanced Study if he is not enrolled in a college.

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 outside the candidate's 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 well established programs in certain areas of physics, geophysics, and geology, while students are commonly accepted in oceanography, zoophysiology, zoology and wildlife management.

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.

Specification of language and/or analogous research tool requirements will be made by the candidate's research committee after full discussion with the candidate. Research tool requirements may include such courses as computer languages, mathematics, law, etc., at the discretion of the committee.

When languages are required, selection and administration of suitable proficiency tests will be under the direction of the graduate committee.

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 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 or research tool requirement, 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 committee 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.

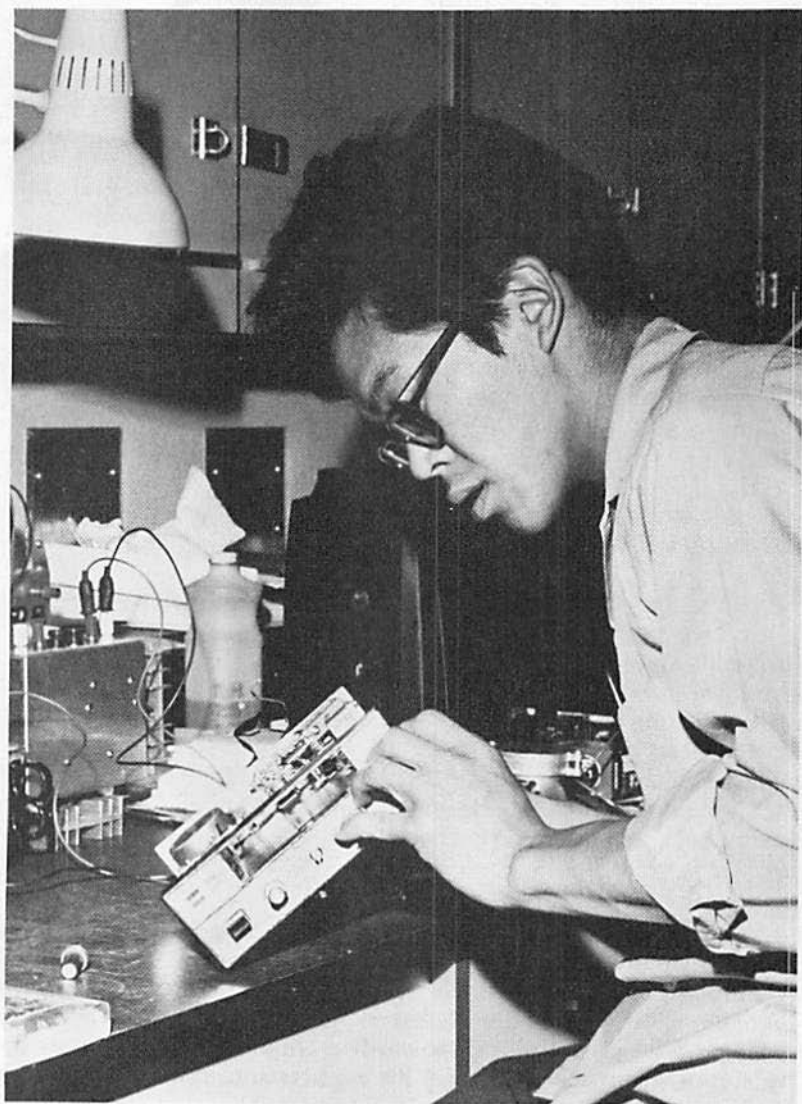
Two copies of the thesis or dissertation, typed and bound (original and first carbon), must be filed in the University library. Departments may require additional copies. All records of work done in connection with the preparation of theses and dissertations are the property of the University and can 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.

THESES AND DISSERTATIONS

A student whose only remaining requirement is the removal of a deferred grade in Thesis or Special Topics must complete graduate extended registration at the beginning of each semester until the deferred grade is removed, since a student who is working toward a higher degree must be registered. In order to extend his registration, the student must

EXTENDED REGISTRATION FOR GRADUATE STUDENTS

complete the appropriate registration form, obtain the approval of the chairman of his graduate committee and the dean of his college, and pay the graduate extended registration fee of \$27.00, which is equivalent to the cost of registering for one graduate credit hour. With this completed, the student is considered as enrolled in the current semester.



Academic Regulations

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

Advanced Placement — The University of Alaska will grant advanced credit, with waiver of fees, on satisfactory performance in College Board Advanced Placement Tests or other national examinations declared acceptable by individual departments. Advanced placement may also be available, with waiver of fees, in some departments through departmental placement tests given at the time of the student's enrollment.

Such credit is available to enrolled students only after the students have completed one or more semesters at the University.

In the case of the College Board Advanced Placement Tests, a grade of "3" or higher is acceptable for placement. The level of performance required on other departmentally approved tests is determined by the specific department involved.

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 instructor'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:

Freshman	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 with the approval of the Academic Council.

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 credits will be classified as "part-time" regardless of his previous standing.

With the exception of those enrolled at the community colleges, any student registered in 12 or more credits must fulfill the requirements in military science or physical education.

Any regular student who does not follow a prescribed course of study or curriculum leading to a specific degree will be enrolled as "interim" major. A student with an interest in a specific college, but who has not selected a major from that college, will be enrolled as a "non-major" in the college.

Special students are considered "undeclared" and are not assigned 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 pay a fee of \$15.00 for each examination. A course in which a student has been registered as an auditor may not be completed for credit by examination.

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.

F — Indicates failure.

CR — The Credit-No Credit option encourages students to explore areas of interest not necessarily related to their academic major. P.E. 100 or one "free" elective may be taken under this option each semester. The instructor will not be informed of the student's status in the course. The student will be given credit toward graduation if he performs at a level of "C" or above. If performance falls below that level, the course will not be recorded on the student's transcript. In either case, the course will not be included in any grade point calculations. If the student later changes his major and the course becomes a requirement, the course will be accepted by his new major department. The student may change from credit-no credit to regular enrollment status or from regular to credit-no credit status during the first two weeks of the semester by informing the Registrar of his desire to change status.

P — Indicates passing work and carries no grade point.

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

I — Given only in cases where the student must do additional work for satisfactory completion of the course and where work already completed is grade C or better; may be given for unavoidable absence or other conditions beyond the control of the student.

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.

DF — Indicates that the course requirements cannot be completed by the end of the semester; that credit may be withheld without penalty until the requirements of the course are met within an approved time. This designation will be used with courses such as thesis, special projects, etc. that require more than one semester to complete or in cases where the course was not completed through the fault of the University.

W — Withdrawn. Given when a student withdraws during the first eight weeks of the semester.

WP — Given when a student makes a regular withdrawal from a course after the first eight weeks of the semester while doing passing work.

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

Grade Points — For the computation 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 2.00 is required for good scholastic standing.

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 Vice President for Academic Affairs 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 12 credits each semester.

Graduate in Absentia — It is a policy of the University that students who will not be present at commencement submit written requests with justification to graduate in absentia.

Financial Aids

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

1. Grants (scholarships)
2. Loan funds
3. Part-time student employment

1. **Grants (scholarships).** At the present time grants are awarded only to Alaskan high school seniors and to currently enrolled University of Alaska students. Non-residents must successfully complete at least two semesters of academic work at the University of Alaska before they become eligible to apply for scholarship assistance.

A limited number of talent grants are awarded each year to students of extremely high capabilities and potential in the performing arts and athletics. Amounts awarded are \$1,400 per year for Alaska residents and \$1,700 for non-residents. Contributors to the program for 1970-71 include First National Bank, Pan American Petroleum, University of Alaska Alumni Association, Alaska National Bank, Burgess, M & O Auto Parts & Equipment Inc., Rotary Club of Fairbanks, Sach's Mens Shop, E. L. Cassel, Professional Pharmacy, Mr. and Mrs. D. Young, Chandler Plumbing and Heating, Captain Cook Hotel, Travelers Inn—Fairbanks, Travelers Inn—Anchorage, Meadowmoor Alaska Dairy, Union Products, Inc., Gene K. Kutsch, DMD, Golden Nugget Motel, Fairbanks Insurance Agency, Sourdough Heating, Nerlands, James Beckley, DVM, and Thrifty Liquor.

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.

Information regarding the Bureau of Indian Affairs Grant-in-Aid program may be obtained from the Anchorage Area Office of the Bureau of Indian Affairs. Students should apply far enough in advance to know the amount of assistance available to them prior to arriving at the University.

Applications for the Alaska State Scholarship-Loan Program may be obtained from the high schools throughout the state. The purpose of this program, initiated in 1968-69, is to assist qualified Alaskan students to secure a higher education in

Alaska and to assist in retaining able students in Alaska for higher education and future leadership. Funds for this program, authorized by the Alaska State Legislature, may be used for tuition, book expenses, and room and board up to a maximum of \$750 per recipient per year.

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 this deadline 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. 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 the entire grant which is to become effective in the forthcoming semester if they earn below 2.0 grade point average in the current semester. Grants are automatically forfeited by recipients who do not enroll during a semester in which their grant is in effect, who enroll for less than a full-time program of studies without special arrangement with the scholarship program co-ordinator, 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 Financial Aids Office.

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 1970-71 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 Native Scholarships	Varies	15,000
Alaska State Employees Association		
"President John F. Kennedy Memorial"	One	250
Covenant High School Alumni Association		
"Stanton Oyoumick Memorial"	One	50
Educational Opportunity Grant	Varies	10,400
First National Bank of Fairbanks	Two	1,000
General Motors	Four	3,423
Harcourt Foundation	One	300
Henderson Estate, John B.	Four	1,600
Hess Estate, Harriet	Two	880
Hess Estate, Luther	Three	1,200
Kennecott Copper Corporation	Two	1,000
Lathrop Estate, Austin E.	Varies	3,887
Leach Estate, Frank M.	One	100
Lewis Fund, Charles W. and Hortense W.	One	500
McCarthy, David Memorial Fund	One	500
McIntosh Estate, Jessie O'Bryan	Varies	13,740
McKinnon Scholarship, Emma	One	500
Mellon Foundation	Varies	7,722
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 Igloo No. 4	One	500
Presser Foundation	One	400
Radio Corporation of America	Two	800
Ralston Purina Company	One	500
Reading & Bates Scholarship	Varies	500
Sears Roebuck Foundation (Home Economics)	One	300
Sheppard Trading Company	One	500
State Room Scholarships	Varies	30,360
Texaco Inc.	Two	1,000
Unalakleet PTA "Sen. William E. Beltz Memorial"	One	150
U.S. Smelting, Refining and Mining Company	One	250
Union Oil Company — Geology	One	500
Union Oil Company — Civil Engineering	One	500
University of Alaska Alumni Association	One	300
Women's Athletic Association	Five	700

2. Student Loan Fund. There are 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 per loan or 50 cents if repayment is made within ten days of the date of the 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 is four per cent per annum. The loan requires a co-signer (not a fellow student), and will be made only for University expenses 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)	Southern California Alumni (1963)
American Military Engineer Revolving Loan Fund	Arthur A. and Anne Shonbeck Memorial (1964)
Lawrence C. Phipps (1930)	Anchorage Soil Conservation Subdistrict No. 4 (1966)
Fairbanks High School Alumni (1932)	Ann Meeks Memorial Fund (1967)
First National Bank (1945)	Anchorage High School (1956)
Phi Tau Gamma (1953)	Anchorage High School PTA (1959)
Palmer Community (1953)	Sheils-Timson (1936)
Glenn Carrington (1953)	Leopold F. Schmidt (1938)
Larry Doheny (1953)	Palmer Associated Students (1941)
Pioneer Women of Alaska (1954)	Frank Slaven (1944)
Women's Auxiliary No. 4, Pioneers of Alaska (1957)	Mr. & Mrs. Walter G. Culver (1959)
Dave M. Dishaw (1958)	Verne E. Roberts Memorial (1960)
Rotary Club of Fairbanks (1963)	James Stanley Rodebaugh Memorial (1960)

James E. Nankervis Memorial (1961)	Lt. Gen. Glenn R. Birchard Memorial Fund (1967)
Herman Turner Memorial (1961)	Lt. Donald R. Robison Memorial Fund (1968)
Marianne Casson Memorial Fund (1965)	
Ketchikan Communication Committee (1966)	Patrick Anderson Memorial Fund (1969)

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, service with the Peace Corps or VISTA. For those who become teachers, one-tenth of the amount borrowed is cancelled each year for five years, representing as much as 50 per cent of the original loan. Interest rate is three per cent 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 under terms similar to those of the University 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.

The Stefano Loan Fund was established by Mr. Ralph R. Stefano, consulting engineer of Fairbanks, for the purpose of furthering instruction 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 Financial Aids Office.

The Alaska Miners Association Loan Fund is available to sophomore, junior and senior students in the College of Earth Sciences and Mineral Industry. Under terms similar to the University Loan Fund, students may borrow up to \$500 per year to a maximum of \$1,000 and repay after graduation at 4% interest. Applications are made through the University Loan Committee with final approval by the Dean of the College of Earth Science & Mineral Industry.


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

a. Listings are available in the Financial Aids Office 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 15 hours per week during the school term and 40 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 Financial Aids Office.

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.

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 of the University's expectation, 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 to encourage students to formulate rules for their own guidance and develop methods of enforcing the rules.

These regulations, except for those based on state law, have been developed jointly by staff and students. Students charged with infractions are advised in writing and given a full hearing with right of counsel and the opportunity to question witnesses or accusers before either elected or appointed student committees or for the more serious cases the joint Student Faculty Judicial Board. The University subscribes to principles of due process and a fair hearing as prepared by the joint statement of the American Association of University Professors, the U.S. National Student Association, the Association of

American Colleges, the National Association of Women Deans and Counselors, and the National Association of Student Personnel Administrators.



Alumni Services



The Office of Alumni Services is the headquarters for the Alumni Association and Career Planning and Placement and is located in Constitution Hall on the University Campus at College.


The University of Alaska Alumni Association was founded November 16, 1927. The association promotes interests in the University among graduates and 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 independent branch chapters in Juneau, Seward, Anchorage, Fairbanks, Palmer, and Nome, Alaska; Northern California, Southern California, Washington State, Inland Empire, Washington, D.C., and Colorado. All correspondence should be addressed to: Executive Secretary, Alumni Association, University of Alaska, College, Alaska 99701.

All graduates and former students who have taken courses for credit at the University of Alaska, including any of its community colleges and branches, and who no longer are attending, are eligible to belong to the association. There are no dues but members are asked to contribute to the Annual Fund each year. The "Alaska Alumnus," a quarterly magazine, is published by the alumni office and sent to all alumni.

Career Planning and Placement is a student personnel service which operates as a division of the Office of Alumni Services. The service provides a central search for new or better positions for students and alumni. Employers may notify the office of their need for qualified, university-trained men and women. Arrangements may be made through the placement office for employers to interview students on campus. The office maintains a job research service which seeks to provide continuous, accurate information regarding current and anticipated employment conditions. All students are encouraged to visit the Placement Office to obtain advisement on careers and to file their credentials.

Technicians lower a borehole seismometer 30 feet into bedrock as part of a research project to develop techniques for earthquake forecasting.





The research programs of the University of Alaska take advantage of the University's unique location in the sub-arctic of Interior Alaska, with easy accessibility to the oceans from the Pacific to the Arctic, accessibility to glaciers and permafrost areas, and a 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 research institutes and associated activities.

Institute of Agricultural Sciences — The University conducts an agricultural research program, in cooperation with the U.S. Department of Agriculture, as a part of its land grant university functions. The research of the station includes animal science, plant science, economics and environmental quality research programs.

Due to the wide range of environments occurring within the borders of Alaska, station facilities are maintained at several locations. The station headquarters and College Research Center are located adjacent to the main campus, the Palmer Research Center at Palmer, the Matanuska Farm seven miles to the west of Palmer, and the Petersburg Fur Farm in Southeastern Alaska. Research studies also are carried out with cooperators in numerous off-station locations throughout the state.

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, marine mammals, furbearers, and upland game species, and often requires close collaboration with biologists of the Alaska Department of Fish and Game, the U.S. Fish and Wildlife Service and other state and federal resource management agencies.

Graduate work leading to advanced degrees in wildlife management may be performed at the unit in cooperation with the Department of Wildlife Management.

Institute of Arctic Environmental Engineering — The purpose of the Institute is to (1) gather information necessary for the solution of arctic and sub-arctic engineering problems, (2) perform engineering research where required, (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.

Geophysical Institute — The Institute was opened on July 1, 1949, as a department of the University. The 79th Congress of the United States established the Institute, and the 80th Congress appropriated funds for the construction of the original laboratory (Sydney Chapman Building) and associated houses. The Geophysical Institute is now housed in the 8-story C. T. Elvey Building on the West Ridge of the College campus. Completed in May and occupied in June, 1970, the Elvey Building was financed by the State of Alaska, the National Science Foundation and the U. S. Office of Education.

The Geophysical Institute has grown from a modest program of auroral observations begun in 1929 to 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 also are 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 160, including some 33 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 — Following recommendations on its prospective national value by a committee of eminent

biologists, the Institute was established by the Alaska State Legislature in 1963 for studies of life in the extreme climate changes of arctic and subarctic regions. To an initial component in zoophysiology have been added programs in human ecology and zoochemistry, and a further component in plant physiology is now being developed. The staff which currently numbers more than 60 persons, exclusive of some dozen doctoral candidates, encompasses a breadth of biological specialties ranging from physical chemistry and biophysics through physiology and biochemistry to field and human ecology. The Institute is located in the new Bio-Sciences Building which provides a variety of technical and instrumental facilities and services. Special field sites include the adjacent 40-acre Campus Experimental Biological Reserve, the Cantwell Reindeer Station, the St. Lawrence Island Station in the Bering Sea and the Homer Shore Station. Visiting scientists from other states and countries are welcomed with some eight to twelve in residence in a given year.

Institute of Marine Science—The Institute was authorized in 1960 by the Alaska 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, chemical, geological and physical oceanography is included within this broad scope. Sea-going and laboratory facilities are available at the Douglas Station, situated some five miles from Juneau; and the Seward Station, situated in Seward and Izembek Lagoon near Cold Bay on the Alaska Peninsula. Campus activities are centered in a new laboratory, completed in January, 1963, and enlarged in 1968. The Institute operates the research vessels Acona, an 85-foot modern oceanographic vessel, the Ursa Minor, an 88-foot power scow, and the Maybeso, a 43-foot trawler. Scientists are invited to request permission to work in residence.

Institute of Social, Economic and Government Research — The Alaska State Legislature established the Institute in 1961 for the purpose of interdisciplinary research in the social and related sciences, with particular emphasis on questions peculiar to Alaska, Northern North America, the North Pacific Basin, and the North Polar region and the circumpolar lands. Research interests center on state, regional and national economic development, utilization of natural resources, human resources and the interaction between man and the environment, the impact of technology and change, education, cultural change

and interchange, and governmental institutions and political processes. Among its service functions, the Institute provides data and information necessary to support activities and development in the public and private sectors, including the collection, processing, and publishing of statistical data on the economy, population, government and resources of the State. The Institute regularly publishes the "Alaska Review of Business and Economic Conditions" and a variety of major special reports.

Institute of Water Resources — The Institute of Water Resources was established in May, 1965, to promote research in all phases of water resources. The Institute staff is an interdisciplinary group whose research interests are concerned with hydrology and hydrodynamics, limnology, water quality control, water chemistry, physical and chemical methods of water and waste treatment, and biological waste treatment, as well as economic and engineering aspects of water resource problems. The Institute works closely with many academic departments and other research institutes on the campus. Research emphasis is concentrated on solutions to Alaskan and far northern water resource problems.

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 utilizing facilities of the University and is coordinated with graduate student academic programs.

Musk Ox Project — The University of Alaska has maintained since 1964 a breeding station for domestic musk oxen on a farm adjoining the University campus. The purpose of this project is to further a wider use of organic resources within the areas to which the musk oxen are naturally adapted.

The musk ox, native to the arctic regions, is able to maintain itself year-round in a tundra environment, digging through the snow in winter for its food. Not a suitable animal for hunting, since it stands its ground, it is easily tamed and adapts readily to the routines of animal husbandry. Possessed of a thick blanket of qiviut, or underwool, which is on the order of cashmere, the musk ox offers strong possibilities of adding to the economies and cash income of the people of the tundra and coastal regions of Alaska.


A training program in herd management is carried out for persons selected by village councils and similar groups prior to the distribution of breeding stock. At the same time, the project's textile specialist teaches native women how to spin, knit, and weave qiviut for established markets. The breeding station and program are supported by the W. K. Kellogg Foundation through a grant to the University and in collaboration with the Institute of Northern Agricultural Research.

Naval Arctic Research Laboratory, Point Barrow — Under contract with the Office of Naval Research the University operates the Naval 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 at the Laboratory last year.

A new muskox calf adds to the breeding stock of the world's fewest domesticated animal.





Through Public Service the University makes available to many residents of Alaska in their local communities, or through special training programs, academic credit courses, educational and training programs, and special services such as films, radio and television programs, publications, and consultation services. Public Service makes available many of the educational and training programs sponsored in part by the federal government through such legislation as the Economic Opportunity Act, Higher Education Act, Manpower Development and Training Act, Education Professions Development Act, and the Smith-Lever Act.

Evening Classes — Resident academic credit courses are offered on the campus at College during the evening, at military installations in the interior of Alaska, and in other communities throughout central and northern Alaska. Summer semesters are conducted at Eielson Air Force Base and Ft. Wainwright. Information is available prior to each semester from the Office of the Dean, Division of Statewide Services, University of Alaska, College, Alaska 99701.

Correspondence Study — More than thirty academic courses are available through the correspondence study program. In addition, a limited number of non-credit courses are available. Courses to meet the expressed needs of Alaskans are emphasized. Further information and catalogs are available by writing to Correspondence Study, University of Alaska, College, Alaska 99701.

Summer Sessions — A wide range of courses is offered on the University campus at College for both graduate and undergraduate credit. Courses are grouped into three- and six-week sessions and are open to: (1) candidates for graduate or undergraduate degrees, or (2) unclassified students wishing to take special classes 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 during the three-week session. A post session Workshop on Alaska includes subjects such as anthropology, education, history, natural resources, and other Alaskan topics.

Special summer institutes are often funded by federal and state agencies and private foundations. Summer institutes in Teaching of French, Counseling and Guidance, English, and the Teaching of Science and Mathematics have been held. 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 Alaska.

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

Special workshops and institutes open to high school age students are also presented. These include the Music Camp and a Youth Leadership Conference. Other programs of a continuing nature include the annual Homemaker's Short Course and Upward Bound.

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

Further information is available by writing to the Office of Summer Sessions, University of Alaska, College, Alaska 99701. A catalog listing courses to be offered is available after March 1 of each year.

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 Mining Extension Program, Division of Statewide Services, University of Alaska, College, Alaska 99701.

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 Fisheries Extension Program, Division of Statewide Services, University of Alaska, College, Alaska 99701.

Extension Center in Arts and Crafts — The Division of Statewide Services operates a resident center on campus at College for artists and craftsmen who have potential for further development. Supported in part by grants from the Indian Arts and Crafts Board and the Alaska State Council on the Arts, young adults are given training in the use of media such as wood, soapstone, and silver, and the development of new designs. Communication skills and basic business methods are also included in the nine-month training program. For further information, contact the Extension Center in Arts and Crafts, Division of Statewide Services, University of Alaska, College, Alaska 99701.

Special Programs — Special programs of a continuing nature include classes and conferences in various civil defense subjects and an Upward Bound program. Non-academic credit short courses, programmed in many areas according to need, are offered. Some of the recent short courses offered are swimming, fencing, upholstering, private pilot ground school, fire safety, and computer programming.

For information on these and related programs, contact the Director, Division of Statewide Services, University of Alaska, College, Alaska 99701.

Conferences — Many types of conferences are held on the College campus annually. Conferences are sponsored by the various units of the University or by state, federal, or private groups. To arrange for a conference, contact the Conference Coordinator, Division of Statewide Services, University of Alaska, College, Alaska 99701.

Cooperative Extension Service — 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, Bethel, and Aniak. University Extension specialists and district Extension agents extend the results of research by the University and the USDA to the public. Local people are helped to identify and solve problems, and to apply the results of scientific research to the improvement of farms, homes, and communities. Work with young people is conducted through the 4-H and Youth Programs, and a statewide headstart program assists in arranging training for teachers and aides.

Extension's traditional audience has been rural people. Today, with no sharp dividing lines between rural and urban interests, Extension agents also serve the consumer, marketing, and agri-business groups. They help citizens of the State to plan 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.

The Local Government program is aimed at educating rural communities to the benefits of incorporation and the education and training of locally elected officials. Headquarters of this program is in Bethel.

The Nutrition program has as its goal improved nutrition for all people. Emphasis is placed on low income and young people. Persons are paid a stipend while they are being trained. Those successfully completing the training program are employed as Nutrition Aides.

Audio-Visual Communications and Media Services — This department is the service department of the Division of Media Services. It supports academic and public service instruction throughout the University of Alaska's statewide system.

A large collection of educational and cultural films, filmstrips, tapes, slides and video tapes are available to the faculty and to schools and groups throughout the State.

The department makes special purpose super 8 and 16mm movies and videotapes by special arrangement. Other media services are available.

Requests for the film catalog should be mailed to the Department of Audio-Visual Communications, University of Alaska, College, Alaska 99701.

Radio Station KUAC (FM) — The only educational radio station in Alaska, KUAC serves the University community and the greater Fairbanks area as a public service. The station, established in 1962, was recognized nationally in 1969 for its long hours weekly on the air and for the percentage of educational and informational programming intended for the general public.

In addition to its program service, KUAC also provides valuable experience for students majoring in speech with a broadcast option and for non-majors who also are interested in broadcasting. It serves the University community through the development of University news programs, public service interviews, and series productions such as the one devoted to the Alaskan native and his problems of cultural transition. These programs are then made available to commercial radio stations all over the State.

The station operates seven days a week, year-round, with 10,500 watts of power in full stereo. Programming includes a great deal of local production as well as many programs from international sources. Write to KUAC (FM), Division of Media Services, University of Alaska, College, Alaska 99701, for a copy of the program schedule.


Educational Television Services — The Division of Media Services has prepared the application for the University's, and the State of Alaska's, first educational television station. At the same time, we have requested federal funds to assist in purchasing the equipment. It is anticipated a full color educational station will be on the air by the fall of 1971. Studios were included in the new fine arts building.

It is anticipated that the television station will serve as a public service for the University and greater Fairbanks communities, provide educational programs as a part of the academic and public service functions of the University, and provide educational programs for local schools and government agencies through contract. Programs will include material initiated in the campus studios as well as nationally available programs.



As Alaska's only public institution of higher education, the University reaches out to the people through its statewide network of colleges and programs.

University of Alaska Regions



The Regional concept was adopted by the Board of Regents to more effectively provide University of Alaska programs to communities throughout the State. A Provost is appointed as administrative head of the Southcentral Region, while the Southeastern Region is presently the responsibility of an Acting Provost, the Vice President for Public Service, with a provost to be appointed in July of 1971. The Office of the Provost coordinates schedules and programs in each region to afford full utilization of staff and resources. The provosts, directly responsible to the Office of the President, serve on the Administrative Council, Academic Council, and the Research and Advanced Study Council. The provosts implement the policies and procedures of the University system within each region. They also maintain liaison between the University Campus at College and the units within the regions and provide for broadened public information and public involvement in all locations served by the University of Alaska system.

In those communities in the State that are not directly served by one of the community colleges, the provost's office or the Office of the Dean, Division of Statewide Services, provides staff for teaching requested courses. These academic credit courses may be graduate or undergraduate courses, depending on the particular needs of that community. Initiative for offering these courses may develop either from the University or the community. In the larger areas, part-time coordinators representing the University are appointed to develop, promote, coordinate, and administer the operation of these courses and vocational-technical or general interest courses. Currently, program coordinators have been identified in Petersburg, Wrangell, Nome, Cordova and Valdez.

COMMUNITY COURSES

Excluding the extensive programs at Elmendorf Air Force Base and Fort Richardson Army Post which are branch campuses of the University of Alaska, Anchorage, the University, through Base Educational Offices, provides courses at the various military installations throughout the State. Courses are taught by University faculty members or qualified instructors from the bases and carry full university credit. Programs are offered at Shemya Air Force Station, Adak Naval Station, King Salmon Air Force Station, Fort Wainwright, Eielson Air Force Base, and Fort Greely. Other military units are serviced through the neighboring community colleges.

MILITARY INSTALLATIONS

COMMUNITY COLLEGES

Each community college operates under a resident director or dean who is responsible to a provost or to the Dean, Division of Statewide Services. These community colleges are financed through the University of Alaska for the academic programs and through the local school districts or government subdivisions and the State Department of Education for the vocational-technical programs. The interest courses are provided on the basis of tuition meeting instructional costs. A Citizen's Advisory Group in each of these communities is appointed by the President of the University to represent the interests and concerns of the community. In addition, an Advisory Committee is appointed for each of the areas of vocational training. Each community college bears the title, University of Alaska, followed by the name of the specific college.

SOUTHCENTRAL REGION

The Southcentral Region, administered through the Office of the Provost, has responsibility for supervising and coordinating all University of Alaska educational programs in the area bounded roughly by Talkeetna and Glenallen on the north, Yakutat on the east, Dillingham on the west, and Adak to the southwest. The Office of the Provost is located at 2533 Providence Avenue, Anchorage, Alaska 99503. The telephone number is 272-1424. In seeking to fulfill the University's responsibility for meeting public higher educational needs in the most populous area of the State, the Southcentral Region is responsible for the following programs and units:

Office of the Provost. Outside of Anchorage, upper division and graduate courses are administered by the Office of the Provost. In the Matanuska-Susitna Borough, the Kenai Peninsula Borough and on Kodiak, the resident director of the community colleges serve as local coordinators. Valdez and Cordova have part time coordinators in their communities.

University of Alaska, Anchorage — Senior College. This unit offers upper division and graduate programs leading to baccalaureate and master degrees for the Anchorage area. Upper division courses are offered in most fields with the exception of physical and natural sciences; however, areas of concentration are in education, psychology, business, English and engineering management. Specifically, students may complete the following master's degrees: Master of Education, Master of Arts, Master of Arts in Teaching, Master of Fine Arts, Master of Business Administration, Master of Science in

Counseling Psychology, and Educational Specialist. The teacher education program provides for cadet teaching as well as meeting certification requirements. A master's degree in Engineering Management can be earned in Anchorage. Resident engineering instructors assisted by instructors from the campus at College cover the entire program. Concentrations in the field of business are in economics, finance, accounting, quantitative systems, and management.

The program is essentially on a late afternoon and evening schedule due to the lack of physical plant. However, it is possible to schedule a full academic load each semester; i.e., 15 hours. Courses are offered at two locations, West Anchorage High School through the cooperation of the borough school district and at Elmendorf Air Force Base through the courtesy of the Air Force. Although the program at Elmendorf has been developed primarily for military personnel, civilians are encouraged to attend these courses. Courses in the upper division and graduate program alternate between these locations.

Anchorage Community College — Authorized by the State Legislature in the spring of 1953, the Anchorage Community College opened its doors to students in February, 1954. The College offers an extensive program of lower division academic programs including associate degrees, all of which carry resident university credit. A broad range of vocational-technical and interest courses are offered under the school district sponsorship. Extensive counseling and testing are provided as well as other personnel services such as placement, financial aids, foreign student counseling, etc.

With the completion of its initial building program the Anchorage Community College now operates a full-time day program for both academic terminal or transfer associate degrees and vocational-technical associate degrees and certificates. Associate degrees are offered in the following areas: accounting, behavioral sciences, electronics, fire science, materials technology, office administration, and police administration. Non-degree vocational programs offered include: automotive technology, dental assistant, medical laboratory, office administration (secretary), practical nursing and welding technology. Current enrollment at the community college is over 3,000 students and approximately 160 courses are offered each semester.

Students participate in the operation of the college through student government and the student newspaper.

Traditional student activities and athletics are developing according to student interest. Service to the community is provided through such activities as the Lyric Opera Workshop, Symphony Orchestra, Festival of Music, Theatre of Sight and Sound, Civic Ballet, and Community Chorus.

University of Alaska, Anchorage and Alaska Methodist University Consortium — Both institutions have been working closely together in programs and facilities to provide the Anchorage student a breadth and depth of educational offerings not possible by either institution individually. It is now possible to cross register for resident credit. Future plans include offering joint courses, combined programs and degrees, and sharing of faculty and buildings.

Kodiak Community College — Though only two years old, Kodiak Borough Community College offers approximately 50 courses each semester with a student population approaching 400. Vocational-technical programs are geared toward the fishing industry and business. The college is fortunate in being able to utilize the facilities of the Kodiak-Aleutian Vocational School. Programs for the Kodiak Naval Station are provided through the college. The college also coordinates offerings in the upper division and graduate programs in addition to offering a full freshman schedule.

Kenai Peninsula Community College — The emphasis in the Kenai Peninsula Community College is in petro-chemicals, environmental science and business courses. The college now provides a full freshman year of courses for the student interested in either an associate degree or a bachelor's degree. The college also coordinates offerings in the upper division and graduate programs. Approximately 50 courses are offered each semester with 425 students attending. The college provides programs for the Wildwood Air Force Station as well as all of the communities within the Kenai Peninsula Borough.

Matanuska-Susitna Community College — The Matanuska-Susitna Community College is currently located in Palmer and offers vocational-technical, academic and interest courses. The college provides services for the Goose Bay military installation and for all the communities within the Matanuska-Susitna Borough. The college also coordinates offerings in the upper division and graduate programs. Approximately 30 courses are offered each semester for approximately 300 students.

**SOUTHEASTERN
REGION**

The Southeastern Region of the University of Alaska comprises that area of Alaska often referred to as the "Panhandle." The principal population centers of the area include: Skagway-Haines, Juneau-Douglas, Sitka, Petersburg, Wrangell, and Ketchikan. The Vice President for Public Service through the Dean, Division of Statewide Services heretofore has administered the community colleges and the undergraduate and graduate programs offered in this region. The Vice President for Public Service was appointed Acting Provost for the region during the 1970-71 academic year. Beginning with 1971-72, a full-time Provost will administer all University of Alaska educational programs in the Southeastern Region.

Office of the Provost. Upper division and graduate courses offered outside of Juneau are administered by the Office of the Provost. In Ketchikan and Sitka the community college resident directors serve as local coordinators. Petersburg and Wrangell have part-time coordinators.

University of Alaska, Juneau — Senior College. This unit offers upper-division and graduate programs. At this time, master's degree programs in Engineering Management and Public Administration are available to interested students.

Currently, there are three community colleges in operation in this area: Juneau-Douglas Community College; Sitka Community College; and Ketchikan Community College. In addition, two part-time coordinators of University of Alaska programs are located in Petersburg and Wrangell.

Juneau-Douglas Community College. Juneau-Douglas Community College offers university transfer courses, vocational-technical courses, general interest classes and many courses as a part of associate degree programs. Associate of Arts degrees with a major in science, police administration, or liberal arts may be earned at the community college. Certificates of completion may be earned in the various fields of business, welding, and in engineering aid-surveying. A wide variety of general interest courses are also offered. Persons may take any general interest course from which they can profit, whether or not they are interested in completing the course for a degree or certificate. Counseling services are available for all community college students.

The college operates from two locations: The new Auke Bay campus, 11½ miles North of Juneau on the Glacier Highway and in Juneau at 5th and Franklin.

Sitka Community College. The Sitka Community College was established in 1962 with the authorization of the Alaska Legislature. In the beginning the primary function was to offer academic and general interest classes in the evening. The college moved from the high school in 1968 to an old elementary school building and with the move began a full-time day vocational business program. In the fall of 1970, the college added a full-time day academic program.

At the present time Sitka Community College offers an Associate of Arts degree in liberal arts as well as certificate programs in vocational fields. With additional staff for 1971, a more varied program will be available. The goal for the Sitka Community College is to offer a comprehensive and valuable program for the people of the Sitka area.

Ketchikan Community College. Ketchikan Community College is an institution of higher education both literally and figuratively. The campus is located high on the hill above the high school and captures a panoramic view of the Tongass Narrows. Phase one of the campus which was completed in 1969 houses the library, classrooms, offices, and a vocational laboratory.

The curriculum is designed to fill the educational needs of the people in the community. Two years of lower division academic study is available for transfer students. Others may pursue associate degrees in established University of Alaska associate degree programs. Adult education courses are offered for those seeking a high school diploma. Specialized vocational courses are offered to those who are working in or wish to be trained for maritime occupations. Short courses in areas of general interest to the public are also available.



New and expanding facilities in many parts of the state reflect the remarkable growth in student enrollment at the University of Alaska.



UNIVERSITY OF ALASKA COLLEGE CAMPUS

The University of Alaska at College, Alaska is the headquarters for the University of Alaska system of higher education. It is located on the original land-grant provided by Congress in 1915. Although programs are developing at the University of Alaska campuses at Anchorage and Juneau, most of the programs of study leading to bachelor's or graduate degrees are available at this campus. This is also the only campus in the system with facilities for resident students.

Admissions

The following admission requirements apply specifically to the University Campus at College, but apply generally to those seeking admission as upper division or graduate students at other campuses in the system.

1. High School Graduates — Baccalaureate Programs

ADMISSION AS A FRESHMAN

Residents — An Alaska 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 high school principals or guidance officers.

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 average 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.

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

HIGH SCHOOL SUBJECT REQUIREMENTS

SUBJECT	Units
English	3
Mathematics:	
Algebra	2
Geometry	1
Trigonometry	½
One Foreign Language	2

United States History	1
Physics or Chemistry	1
Natural or Social Science	1
Elective	4
TOTAL	15½

SPECIFIC ENTRANCE REQUIREMENTS

The specific high school credit entrance requirements of the six colleges of the University are given below:

College	English	Mathe- matics	**Foreign Language	U.S. History	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, Psychology, and Sociology	3	2	2	1	4	5
Education and Home Economics	3	*2	0	1	2	7
College of Biological Sciences and Renew- able Resources	3	† Algebra - 2 Geom. - 1 Trig. - ½	† †	1	Physics or Chemistry - 1 Biology or Elective - 1	7
College of Business, Eco- nomics and Government:						
Business	3	2	†	1	2	7
Economics, and Political Science	3	2	2	1	2	5
College of Earth Sciences and Mineral Industry:						
Geology, Geological Engineering, Mining Engineering, Geography	3	Algebra - 2 Geom. - 1 Trig. - ½	0	1	Physics or Chemistry - 1	7½
	3	2	2	1	4	5
College of Mathematics, Physical Sciences, and Engineering	3	Algebra - 2 Geom. - 1 Trig. - 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 two units of a high school foreign language will normally enroll in second year language. See placement tests, Page 71.

†One year of algebra and one 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 specific degree programs.

Entering freshmen whose background of training in English and mathematics appears to be deficient when measured by placement tests may be required to take Engl. I or Math. 105 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.

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" 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).

Applicants who have attended other accredited institutions are eligible 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.

ADMISSION AS A TRANSFER STUDENT

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 30 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 Education Development Tests.

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

ADMISSION AS A POST GRADUATE STUDENT

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 — In general, a student may be admitted to graduate status 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. See page for detailed requirements.

ADMISSION AS A GRADUATE STUDENT

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 and no more than six credits 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.

ADMISSION OF OTHERS

Auditors — Auditors are students who enroll for informational instruction only. They do not receive academic credit, do not have laboratory privileges, and may not 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 is 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 Alaska 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 by presenting acceptable CEEB Advanced Placement Test Scores, 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 1 for the fall semester and December 1 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. Secondary school records are not required of graduate student applicants and those transfer students who have completed more than one full year of college work elsewhere. If the work has been taken at two or more collegiate institutions, an original transcript 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. **ACT Test.** Results from the tests prepared by the American College Testing Program (ACT) or the Educational Testing Service (SAT) are required for all entering freshmen and those transfer students with less than 30 semester hours of transferable credit. Test results must be on file with the office of the Director of Admissions and Registrar before an application can be accepted. It is the responsibility of the student to have the test results sent to this office.

It is suggested that whenever possible, applicants complete the ACT Test since this is a registration requirement for all entering freshmen and transfer students with less than 30 semester hours of transferable credit.

4. **Letters of Recommendation** (graduate applicants only). At least three letters of recommendation are required from people capable of describing the applicant's character and ability to undertake graduate study and research.

AFTER ACCEPTANCE

After receiving and processing the above materials, the Registrar's Office will mail to the student a statement of 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 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 for seven credits or more, any students enrolling for seven or more hours for the first time,

and to former students returning to the University after an absence of two or more semesters enrolling for seven 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 within 6 months of the registration date. 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 completed and on file at the Student Health Center before registration may be completed. A physical examination form will be sent with the notice of acceptance. This information will be used only as a background for providing thoughtful health care. It will not jeopardize school status. All medical records are kept confidential on file at the Student Health Center. Although a new physical examination is not required each year, it is a yearly requirement for all students enrolling for seven or more credit hours to have a completed tuberculin skin test (a minimum of 48 hours is required before the test is read) or a chest X-ray. A chest X-ray must be taken if the tuberculin test is positive. Students will not be permitted to register unless this requirement is met and the results of the test recorded at the Student Health Center.

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 by the Registrar's Office.

Fees at College Campus



	RESIDENT	NON-RESIDENT	SUMMARY OF SEMESTER CHARGES
Undergraduate Full-time Students			
Non-resident tuition		\$ 150.00	
University Fee (12 + credit hours)	\$ 100.00	100.00	
Campus Activity Fee	36.00	36.00	
*Health Service Fee (Approx.)	<u>25.00</u>	<u>25.00</u>	
Total Undergraduate Fees	\$ 161.00	\$ 311.00	
Part-time Undergraduate Students			
11 Credit Hours	\$110.00	\$ 235.00	
10 Credit Hours	110.00	210.00	
9 Credit Hours	110.00	185.00	
8 Credit Hours	110.00	160.00	
7 Credit Hours	110.00	135.00	
Less than 7 Credit Hours — \$18.00 per credit hour			
Campus Activity Fee	20.00	20.00	
Recreational Athletic Fee (\$5.00)	(Voluntary)	(Voluntary)	
*Health Service Fee (Approx. \$25.00)	(Voluntary)	(Voluntary)	
Full-time Graduate Students			
Non-resident Tuition		\$ 150.00	
600 — 700 Level Courses (12 + cred. hrs.)	\$ 150.00	150.00	
Campus Activity Fee	36.00	36.00	
*Health Service Fee (Approx. \$25.00)	<u>25.00</u>	<u>25.00</u>	
Total Graduate Fees	\$211.00	\$ 361.00	
Part-time Graduate Students (600 Level Courses)			
11 Credit Hours	\$165.00	\$ 290.00	
10 Credit Hours	165.00	265.00	
9 Credit Hours	165.00	240.00	
8 Credit Hours	165.00	215.00	
7 Credit Hours	165.00	190.00	
Less than 7 Credit Hours — \$27.00 per credit hour			
Campus Activity Fee (7-11 credit hours)	36.00	36.00	
Recreational Athletic Fee (\$5.00)	(Voluntary)	(Voluntary)	
Health Service Fee (\$25.00)	(Voluntary)	(Voluntary)	

*See Page 67 for health service fees.

NOTE: When a combination of undergraduate and 600 level courses are taken, the appropriate full or part-time graduate level University fee for the total number of hours taken or a combination of undergraduate and graduate credit hour fees, whichever is lower, will be paid.

Residence Hall Rents and Meal Tickets

Double Rooms	\$250.00
Single Rooms	285.00
Meal Ticket	450.00

NOTE: Students taking less than seven semester hours credit are not eligible for residence hall occupancy.

Other Fees

Application Fee (Remit with Application)	\$ 10.00
Late registration Fee	
First Day	5.00
Each succeeding day	2.00
Change of Registration Fee (after 3rd day)	1.00
Credit by Examination Fee (each examination)	15.00

The university reserves the right to change or add to its fees at any time.

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

**CAMPUS
ACTIVITY FEE**

Full-time undergraduate students carrying 12 or more semester credit hours or the equivalent, and graduate students carrying seven or more semester credit hours or equivalent, shall be charged the Campus Activity Fee totaling \$36 per semester. Each will receive an identification card entitling him to privileges in the following programs:

Recreation-Athletics Program — Use of the Patty Building recreational facilities, including pool, and admission to scheduled 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, education, and governmental activities, including receipt of student paper, movies, scheduled social

events, and student elections and administration of student government. This program is administered by elected and appointed student officials of Associated Students of the University of Alaska. The fee provides \$16.50 for the Associated Students Program, \$15.00 for the Campus Activity Center and \$5.00 for the Recreation-Athletics Program.

Part-time students carrying seven to eleven semester credit hours shall be charged a Campus Activity Fee of \$20 a semester. Five dollars of this fee goes to the Associated Students Program and \$15 to the Campus Activity Center. Each will receive an identification card entitling him to all privileges of the Associated Students Program, except voting, holding office, the yearbook, and movies. Such students may voluntarily purchase privileges of the recreational-athletic program at \$5 a semester.

All students under 26 years of age, carrying seven or more semester credit hours or equivalent shall be charged a Student Health Service Fee to be quoted at registration, which includes use of the Health Center and participation in a group medical plan to cover accidents and sickness.

STUDENT HEALTH SERVICE FEE

The Student Health Program is administered by the Health Center under the direction of the Director of Student Affairs and the Head of Student Health. Hospital and medical treatment for common illnesses and injuries are provided in nearby Fairbanks, under limits of coverage set forth in the student health insurance plan. Each student will be supplied with a brochure outlining the insurance coverage.

All students 26 years of age and over, carrying seven or more semester credit hours or equivalent, not wishing to participate in the group medical plan, may use the Health Center by paying a fee of \$5 a semester. These students must have a physical examination on file in the Student Health Center.

Married students may secure additional coverage for spouse and children if desired. Rates for such coverage will be quoted at registration time. This additional coverage is for the insurance plan only and does not include services at the Health Center.

A spouse who is a student carrying seven or more semester credit hours or equivalent, and who has a physical examination on file in the Student Health Center, may pay a fee of \$5 per

semester for use of the Health Center. Such person must also be covered under their spouse's Student Health Insurance Program.

ROOM AND BOARD

Contracts for room and board are binding from the date signed to the end of the academic year.

Room Deposit — The completed application for housing, with a \$50 reservation and damage deposit, must be returned to the Head of Student Housing, University of Alaska, College, Alaska 99701. If you decide not to attend the University of Alaska, and a written statement is received by the Housing Office, the policy in regards to refunds will be as follows:

Fall Semester — Cancellations received prior to August 15; \$25 will be refunded. Cancellations received on or after August 15; No refund of deposit.

Spring Semester — Cancellations received prior to December 15; \$25 will be refunded. Cancellations received on or after December 15; No refund of deposit.

If all provisions of the contract have been complied with and no damage charges have been assessed, the \$50 deposit will be refunded at the end of the school year. If the resident elects to re-apply for a room in the residence halls for the following year, his deposit will not be refunded but will be transferred to the renewal application.

There are no refunds for applications made and then cancelled after August 15 or December 15.

Room Rent —

Double Room per semester	\$250.00
Single Room per semester	\$285.00

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

Room rent is refundable only in emergency cases as approved by the Director of Student Affairs upon recommendation of the Student and Faculty Housing Advisory Committee. However, there are no refunds during the last two weeks of the semester.

Meal Tickets — When registering, each residence hall occupant is required to buy a meal ticket for cafeteria meals at \$450.00 per semester.

Meal tickets become effective at the evening meal on registration day of each semester. 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. The unused portion less a service charge equal to five days' meals will be refunded. No refunds will be given if a student withdraws during the last two weeks of the semester.

Semester meal tickets do not include vacation periods. Special meal tickets may be purchased before specified dates at the rate of \$4.50 per day. Meals may also be purchased during vacation periods at a la carte prices.

The Alaska Railroad gives qualified students round-trip privileges with the purchase 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 and obtain a receipt when purchasing his one-way 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.

TRANSPORTATION TO THE UNIVERSITY



Academic Regulations College Campus

In addition to the academic regulations that apply throughout the statewide system of higher education, the following regulations apply only to the University at College:

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.

Many entering freshmen will 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 the orientation program. 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 \$7 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 appears to be deficient in English and mathematics may be required to take Engl. 1 or Math 105 or both in addition to the requirements of his chosen curricula.

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 prerequisite to further study, will carry no credit.

An additional fee of \$5 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, if it is felt that the test scores may be of value to the transfer student and his advisors, he may take the placement and guidance tests at the time they are administered to entering freshmen.

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 on a change of department and/or major form.

Drop/Add — A student is expected to complete the courses in which he is enrolled. He may, if circumstances warrant, withdraw without penalty during the first eight weeks of the course; after that time a grade of "WP" is given if he is doing passing work or "WF" if he is doing failing work. 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 Engl. 111 may be made only upon petition. Students wishing to add courses to their schedules may do so until the end of the late registration period. The fee for student initiated course changes is \$1 per course. A Drop/Add card must be obtained from the student's academic advisor.

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 disqualified or, under unusual circumstance, may be permitted to continue on probation but may enroll for a maximum of two college level courses in any unit of the University providing they have their program approved by the dean of their college. If a "C" or higher average is obtained in these two courses a student may again enroll as a full-time student. If less than a "C" average is obtained in these two courses, the student may be academically disqualified. A disqualified student will not be permitted to re-enroll in academic programs administered on the campus at College by the Vice President for Academic Affairs or in upper division programs at Anchorage or Juneau for one or more semesters, and will be re-admitted 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 another of the University of Alaska's programs — Community Colleges, Summer Sessions, Evening Division, etc.

Students who are academically disqualified from a baccalaureate degree program may, as high school graduates, enroll in academic programs administered by the Vice President for Public Service if he is admitted by the appropriate program dean or director.

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

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.


AWARDS

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. Shields Prize
Sigma Xi Club, University of Alaska
General James Steese Prize
Joel Wiegert Award



Campus Buildings and Facilities

CAMPUS BUILDINGS



The Bunnell Memorial Building, dedicated to the late Charles E. Bunnell, first president of the University, consists of general administrative offices, classrooms, laboratories, and a large lecture hall. It also includes offices of the Cooperative Extension Service.

The Brooks Memorial Mines Building provides space for classrooms, laboratories, offices of the College of Earth Sciences and Mineral Industry, and offices of the U.S. 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 Bio-Sciences 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, 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 Marine Sciences; the Institute of Water Resources; the Institute of Arctic Environmental Engineering; laboratories of the State Division of Highways, 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 thousands of catalogued specimens of Eskimo and other artifacts in mineral, anthropological, ethnological, paleontological, botanical, and natural history fields.

The Sydney Chapman Building is the former home of the Geophysical Institute. The laboratory facilities of the three-story structure are used by various science departments.

Constitution Hall was completed in 1955 and is the University Student Union Building. It houses dining, recreational, and co-curricular facilities. 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 an information booth, 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 radio station, and the Alumni and Graduate Placement Office.

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 people is provided on special occasions.

The Elvey Building houses the Geophysical Institute, formerly located in the Sydney Chapman Building. It contains facilities for research in arctic and sub-arctic natural phenomena as well as graduate instruction in geophysics. The impressive six-story structure is located on the west ridge of the campus, overlooking the Tanana Valley and the Alaska Range. The building bears the name of the late Christian T. Elvey, Director of the Geophysical Institute, Emeritus.

The Library, Fine Arts and Humanities Complex, provides some of the finest facilities in the country for the fine arts and humanities curriculum. The departmental offices of the College of Arts and Letters are housed in the complex. Features of the building are a 480-seat theater, a 1,072-seat recital hall, vast art studios, and, full-sized FM radio and educational television studios that can be centrally controlled.

UNIVERSITY LIBRARY

The University of Alaska Library, named for Elmer E. Rasmuson, moved into the new five-level 10.6 million dollar Library, Fine Arts and Humanities complex in the fall of 1969. The library collection consists of more than a quarter of a

million volumes, 5,000 periodical and serial titles, 5,500 reels of microfilm, 300,000 microcards and microfiche and 2,000 phono-records. Book holdings are available on open stacks for the use of patrons during the 89 hours per week the library is normally open. A separate reserve reading room is open until midnight five nights a week.

Materials are classified according to the Library of Congress system. Current acquisitions are received immediately following publication on the English Language Approval Plan (ELAP) for college libraries.

One of the outstanding features of the new facility is the abundance of study areas and lounges. The seating capacity of 1,000 includes individual study carrels for one-third of the student body as well as closed graduate student carrels and research studies for use by faculty members. The graduate carrels and faculty studies are available upon application to the Director of Libraries.

The main book collection is housed on the fourth and fifth levels. Books in Library of Congress classification A through N are located on the fifth level, P through Z on the fourth. Graduate carrels, seminar rooms, individual study carrels and smoking rooms are located on each of these levels. Rooms for using personal typewriters also are available.

The main floor of the new library is on level three and contains the circulation and information desks, the card catalog, the separate reserve book room, the reference area, a student lounge area, and study tables and carrels for student use. The Reader Services department and other library administrative offices are on level three. A special collection of books on Alaska and the polar regions, known as the Skinner Collection, is housed on this level. The bibliography, oversize, juvenile, and rare book collections also are located on level three.

The non-circulating collections are housed on level two. These include current periodicals which are on display shelves, bound volumes and microfilm of journals, and the appropriate periodical indexes. Microfilm readers and coin-operated self-service copy machines are available. A computer printout of all serial and periodical titles held by the library gives call numbers for locating journals, and a serials record file lists complete holdings for each title. Current and back issues of

local, national and foreign newspapers are available, including the complete run of The New York Times and its indexes. A current collection of college and university catalogs and a curriculum laboratory of textbooks maintained by the Education Department are located here. Two lounges add to the comfort of patrons.

Level one houses the documents collection, the University archives and manuscripts collection, the map room and the microform room. The documents collection constitutes approximately one-fourth of the total library collection. It contains publications of the U.S. Government, for which the library is a selective depository. These materials are arranged by the Superintendent of Documents classification.

The microform room is adjacent to the documents collection, and houses the Atomic Energy Commission (AEC) research reports, the Educational Research Information Center (ERIC) publications, the Human Relations Area File (HRAF) and other microfilm, microfiche and microcard material.

The map room is located in the documents area. Available for use are subject area maps of the countries of the world, an extensive collection of Alaskan maps, U.S. Geological Survey maps of Alaska, and a special collection of rare maps.

The University archives and manuscript collection includes University records and special collections such as the Gruening, Bartlett, Rivers and Dimond papers, records of the Russian American Company 1802-1869, writings of pioneers and other original Alaskan material.

Interlibrary loan service is made available to graduate students and faculty through the Reader Services department of the library. The library's membership in the Pacific Northwest Bibliographic Center makes the resources of the large university libraries in the nation available to the University of Alaska.

Office of Student Affairs

GENERAL RESPONSIBILITIES

The University provides services intended to assist students in making their educational careers more profitable and meaningful. While the principal function of the University is to foster the intellectual growth of the student, it is recognized that the social, moral, physical, and spiritual development of the individual also are of prime importance. Mindful of its obligation to assist the total development of the student, the University continues to expand its student personnel facilities to meet the need for individualization in the educational process.

The Office of Student Affairs is responsible for coordinating and extending personnel services such as: a) orientation activities to assist new students adjusting to the privileges and responsibilities of membership in the University community; b) psychological testing to aid students in finding out more about their academic and vocational potentialities and capabilities; c) counseling with students relative to their personal or educational problems; d) financial assistance for students through the administration of scholarships, loans, and part-time jobs; e) medical attention for students with health problems; f) the assignment to, and the supervision of student residence halls; g) the guidance of student co-curricular activities and organizations; and h) the promotion of high standards of student conduct.

Recognizing the need to insure the privacy of individual records, the University releases information only upon permission of students to agencies off campus. Records are available for legitimate on-campus professional use on a need-to-know basis. Information on students is maintained by the following offices: Registrar for academics, Counseling for professional reference, Health Services for medical history, and Office of Student Affairs for disciplinary records and extra-curricular activities. Academic and personal information is released to other institutions or employers solely upon release by the student. General information only is discussed with governmental agencies conducting standard investigations.

It is recommended that students release information concerning their participation and performance in university activities for inclusion in their references. Otherwise, reports are written indicating that there is no record of the students' activities at the University, which might be misleading. Students are encouraged to forward personal references for the Office of Student Affairs to keep on file.

STUDENT HOUSING AND FOOD SERVICE

Because the physical environment of the student during his college years is an important part of his educational experience, the University takes pride in providing the student with carefully planned and supervised modern facilities which help promote maximum educational and social development.

Each residence hall is staffed with a resident advisor and several student advisors. These key people in the residential living environment help create and sustain productive and creative experiences through which students realize a maximum amount of educational, social, and cultural values. The resident advisor is responsible for the administration, programming, and counseling within a residence hall. The student advisors are full-time students who are selected to work with the resident advisor in planning and administering an interesting and meaningful social, governmental, and recreational program. All staff members have had considerable experience in group living and group activities.

Student rooms have either fixed or movable furniture. Each student has his own bed, desk, chair, mirror, and drawer and closet space; it is his responsibility to provide all other furnishings; including bedding, pillow, and towels. Sleeping bags may not be used in residence halls. Animals are not permitted in residence halls; do not bring pets.

In addition, each hall includes a public lounge for entertaining, relaxing, and recreational facilities. Regular custodial service is provided in common areas such as corridors, lounges, and bathrooms.

Only a limited number of headbolt heaters for automobiles are available. All motor vehicles garaged, stored, or used on campus one or more times each week must be registered and bear a University decal. Applications for decals are taken at the Safety and Security Office located in the Bunnell building.

Students bringing guns into the residence halls are required to store them in a central storeroom under staff supervision. There is absolutely no exception to this policy.

All single students under 21 years of age are required to live in a University residence hall during their first year on campus unless: a) they live at home, b) they have had previous community living experience of more than a year beyond the high school level, or c) they have special permission from the Dean of Students. Students of sophomore standing or higher may live in one of the halls if space permits. Full-time students will be given preference over part-time students in the assignment of hall accommodations. Upperclassmen are given preference over new students in the assignment of single rooms.

Room assignments in general are made on a first come first served basis provided application and deposit requirements are complete.

The Student Housing Office is located in the newly completed complex which joins the Moore, Bartlett, and Skarland residence halls. This office is staffed with four fulltime staff members, the Head of Student Housing, the Assistant Head of Student Housing, an administrative secretary, and a clerk-typist. During the normal academic year the office is open from 9:00 a.m. to 12:00 noon and from 1:00 p.m. to 4:30 p.m. During the registration period at the beginning of each semester the office is open extended hours.

Andrew Nerland Hall houses 98 men in double and single rooms on its four floors. First occupied in 1953, Nerland Hall is named for a pioneer Fairbanks merchant, long-time member of the Board of Regents, and President of the Board from 1935 until his death in 1956.

John E. McIntosh Hall, completed in 1956, has double and single rooms for 98 men. This four-story building is named for a former President of the Board of Regents.

Wickersham Hall, completed in 1957, is a three-story residence for 88 women. It has single rooms and suites with four women sharing each suite, which consists of two sleeping rooms, a study, and a lavatory. The Student Health Center is located on the first floor of the west wing. This hall is named for the late Judge and Mrs. James Wickersham. Judge Wickersham introduced the bill into Congress that created the University of Alaska, and Mrs. Wickersham served on the Board of Regents.

Morton Stevens Hall, completed in the fall of 1958, is a four-story co-educational unit with accommodations for 63 men and 33 upperclass women in double and single rooms. This hall is named for Morton Stevens, who was president of the Board of Regents from 1921 until 1932.

Austin E. Lathrop Hall, a co-educational unit completed in 1962, houses 100 men in double rooms on its four floors, and upperclass women on the fifth floor. The building is named for a prominent Fairbanks businessman whose interests throughout

Alaska were many and varied. Mr. Lathrop served as a member and later as Vice President of the Board of Regents during the period from 1932 until his death in 1950.

Ivar Skarland Hall, completed in the fall of 1964, provides double and single room accommodations for 138 women. The study-bedrooms are located around a central core area containing lounge, sewing rooms, ironing rooms, T.V. lounge, and shower facilities. The hall is named for Ivar Skarland, long-time professor of anthropology at the University.

Terris Moore Hall, a co-educational unit completed in 1966, named for the second president of the University is an eight-story building containing both single and double rooms. Capacity of the building is 322 students. Facilities in Moore Hall are similar to those of its companion halls — Skarland and Bartlett. These three units comprise to date a living center on the hill for men and women to the west of the President's Residence overlooking the Tanana Valley.

E.L. Bartlett Hall is a new high-rise, co-educational residence hall which houses five floors of men and two floors of women. Opened to occupancy during the fall of 1969, the eight-story residence hall was constructed at a cost of \$2.9 million. Bartlett Hall is the central building in a student housing complex that includes Moore Hall and Skarland Hall. A food service and dining facility, planned for completion in the Fall of 1971, will complete the complex. The hall was named for E.L. "Bob" Bartlett, who served for 24 continuous years as the Alaskan delegate to Congress and U.S. Senator.

MARRIED STUDENT HOUSING

Married student housing is provided in several areas. **Walsh Hall**, completed in 1959, has accommodations for couples with no more than one child. This spacious building contains 12 furnished apartments consisting of a living room-kitchen, bedroom, and bath. The building is named for the late Michael Walsh of Nome who was a long-time member of the Board of Regents.

Harwood Hall, completed in the spring of 1964, was named for the late Boyd Harwood, former member of the Board of Regents. The building houses an additional 36 married student couples or families. All apartments are furnished except for personal items such as dishes, utensils, and bedding.

Garden Apartments, completed in 1969, are designed to house married couples with two or three children. There are four apartments within this unit. Each has two bedrooms and is furnished except for personal items such as dishes, utensils, and bedding.

Modular Units consist of 29 one-bedroom units completed in the fall of 1970. The units are located on the south slope behind Lathrop and Stevens halls facing the Alaska Range. All units are furnished except for personal items such as dishes, utensils and bedding.

Applications for student housing will be mailed to all students with their notification of acceptance from the Registrar's 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 providing 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 \$50 reservation and damage deposit. 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 15. 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.

RESIDENCE HALL APPLICATION PROCEDURES

The housing-board contract is in effect from the date of signing to the end of 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 15, 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 \$250 per semester and for a single room \$285 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.

FOOD SERVICE

Meal Tickets — Each occupant of an undergraduate residence hall is required to buy a five or seven day 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 the meal tickets is the first day of upperclass registration.

All members of the undergraduate residence halls are required to contract for their meals both semesters at the University Commons. Breakfast, lunch, 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, except as approved by the Director of Student Affairs, upon the advice of the Housing Advisory Committee, in cases of prolonged illness, University-sponsored activities where meals are not provided, or other unavoidable absence.

STUDENT HEALTH CENTER

Preventive and educational, as well as protective, health services are the concern of the University and are administered by the Staff at the Student Health Center. Health counseling and limited out-patient care are available from qualified health professionals who strive to maintain a private practice type of relationship. Physicians are at the Health Center three hours daily Monday — Friday. Only those students who have paid the student health fee and have a physical on file are eligible for services at the Student Health Center.

The responsibilities of the Student Health Staff are varied. The main objectives are to review mandatory health examinations for new students, provide follow-up care on

medical conditions as needed, initiate out-patient service during the day, furnish advice for emergencies at night, supply information concerning the health insurance coverage and coordinate the various health programs. Under the supervision of the Head of Student Health these policies are designed to maintain a state of optimum health, both physical and emotional, among the students.

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 seven or more hours and under the age of 26 years. For all students over 26 years of age it is optional. It is designed to supplement, but not to replace Health Service care. Brochures containing details of the policy are available at the Health Center.

The office provides professional counseling services and specialized testing services for all regularly enrolled students.

COUNSELING AND TESTING

Educational Counseling — Each student who has declared a major is assigned a faculty advisor who assumes special responsibility for the student's welfare and helps him plan his academic program. The student who is uncertain of his choice of an academic major is assigned an interim advisor until a definite academic goal is chosen. Students who wish information or help with regard to the selection of a major academic field should avail themselves of the counseling and testing services offered by the University.

The Department of Counseling and Testing assists students who fail to meet the scholarship standards of the University, who need help to discover academic weaknesses, and who need help in developing adequate study skills.

Vocational Counseling — The counseling and testing staff assists students in self-appraisal of their unique interests and aptitudes and in their search for a vocational goal. Psychological and vocational interest tests are used as needed. A library of vocational information is maintained and each academic department has additional information pertinent to its field.

Personal Counseling — The student may meet with professionally trained and experienced counselors individually and/or in groups to discuss adjustment problems of a personal

nature. Students who encounter normal uncertainties and stress, which interfere with their ability to succeed, i.e., difficulty in social relationships, indecision regarding the draft, personal indecision, and moodiness, may find it helpful to talk with a counselor. All interviews are private and the discussions are kept confidential. The student may apply in person for these services. Student contacts with the counseling service are usually voluntary, although individuals may be referred to the Counseling Center by faculty and other University personnel.

Testing — Some tests are required of all new students with less than sophomore standing. The required tests include the test battery prepared by the American College Testing Program, the Mathematics Placement Examination and the Foreign Language Placement Test for students continuing a specific foreign language.

To assist students in self-appraisal, a number of other instruments are provided. Vocational interest inventories, scholastic aptitude tests, achievement tests, and personality inventories are available with interpretation given by members of the counseling staff.

In addition to the above services, special nationwide testing programs are administered by the Department of Counseling and Testing. Students who intend to proceed with advanced study and who are required to take the Graduate Record Examination, the Law School Admission Test, the Medical School Admission Test, or similar tests, may arrange for these tests in the Counseling Center.

STUDENT ORIENTATION SERVICES

In response to the needs of students from rural areas of Alaska and students whose cultural background is different from the majority of the campus student body, the University has developed a new program called Special Orientation Services. The primary concern of this program is helping the student make the transitions from a small school and rural environment to the complexities of University life. The program is inter-cultural in nature in that services are offered to students from all cultural backgrounds. The program is especially responsive to the needs of the Alaska native student. The initial planning and development of the program has been guided by an advisory board of seven native University students.

A Special Orientation Services Center offers a place for the student to seek counseling, information, tutoring and help on many aspects of University life. The program offers help and advice to the student during registration in the fall and spring semesters. Entering freshmen may choose to use SOS staff members for academic advisement until a time when they have found an academic area of special interest to them. A lounge is open for students and faculty in which they may relax and visit.

Special core courses are being developed in areas such as English, biology, mathematics, sociology, history and study skills which will aid the student in developing the academic skills necessary for success at the University.

In coordination with the Associated Students of the University of Alaska, i.e., the student self-governing body, the Office of Student Affairs promotes and provides staff guidance for the development of a wide range of balanced and contemporary co-curricular activities. These activities include special interest groups, clubs, residence halls, governing bodies, and service organizations. ASUA specifically sponsors the newspaper and some campus social events. The Student Union Board provides a comprehensive program of activities in the Campus Activities Center as well as across the campus. Participation in all these activities is open to anyone interested.

CO-CURRICULAR ACTIVITIES

To encourage students to maintain a 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 by the student governing bodies on campus.

1. Officers of co-curricular activities must maintain a cumulative grade point average of 2.00 or higher while carrying 12 or more semester hours of credit.
2. 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.

ENROLLMENT HISTORY AND SUMMARY

ENROLLMENT HISTORY — Main Campus

1922-23	15
1932-33	121
1942-43	157
1952-53	296
1962-63	1159
1969-70	2225


ENROLLMENT SUMMARY 1970-71 First Semester

	Men	Women	Total
Freshmen	467	337	804
Sophomores	219	113	332
Juniors	203	99	302
Seniors	161	78	239
Graduates	151	51	202
Without Class Standing	254	286	540
Transfers	154	108	262
Totals	1609	1072	2681

ENROLLMENT DISTRIBUTION 1970-71 First Semester

Alaska	1073	874	1947
Other States and U.S. Possessions	473	178	651
Foreign Countries	63	20	83
Totals	1609	1072	2681

State and Federal Agencies on College Campus



State Division of Geological Survey — The central headquarters and laboratory of the division are located on the campus in the Maintenance Warehouse (Services Building). A staff of 19 are located here, including mining geologists, engineers, and minerals laboratory analysts. The laboratory is for assay and analytical services to miners and prospectors. The geologists and engineers carry out economic geological field mapping, examination of mining prospects, and supply technical advice and assistance to prospectors and mineral exploration companies. An active Kardex file of mineral occurrences and mining claims is maintained. The division also works in close cooperation with faculty members in related fields to further encourage and assist the development of mineral resources in Alaska.

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.

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.

Alaskan Mineral Resources Branch of the U.S. Geological Survey — This branch conducts a program of geological exploration and research in Alaska. Some of the functions are aerial 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 maps and geological reports are available to the public for use in the office.

Arctic Health Research Center — The Arctic Health Research Center (AHRC) of the Public Health Service, U.S. Department of Health, Education and Welfare was established in Anchorage in 1948 as the first and, to date, the only permanent research facility in North America devoted to the full-time study of health problems in low temperature environments on a year-round basis. During the summer of 1967 the AHRC moved into new quarters located on the West Ridge of the main campus.

The center contains six major research sections: Entomology, Environmental Engineering, Epidemiology, Nutrition and Metabolic Disease, Physiology, and Zoonotic Disease. During the 20 years of its existence, the laboratory has pioneered in expanding knowledge of factors which influence human health and adaptation in northern latitudes and has gained international recognition for its contribution in many fields. A one and a half million dollar research facility is being added to the center and is scheduled for completion by September.

The AHRC includes a reference library containing over 30,000 cataloged items pertaining to the fields of public health, medicine, and related subjects.

The center also maintains a field unit in Anchorage for continuing clinical investigations planned or underway in association with the Alaska Native Medical Center. A small field unit of the AHRC Epidemiology section is located in Bethel.

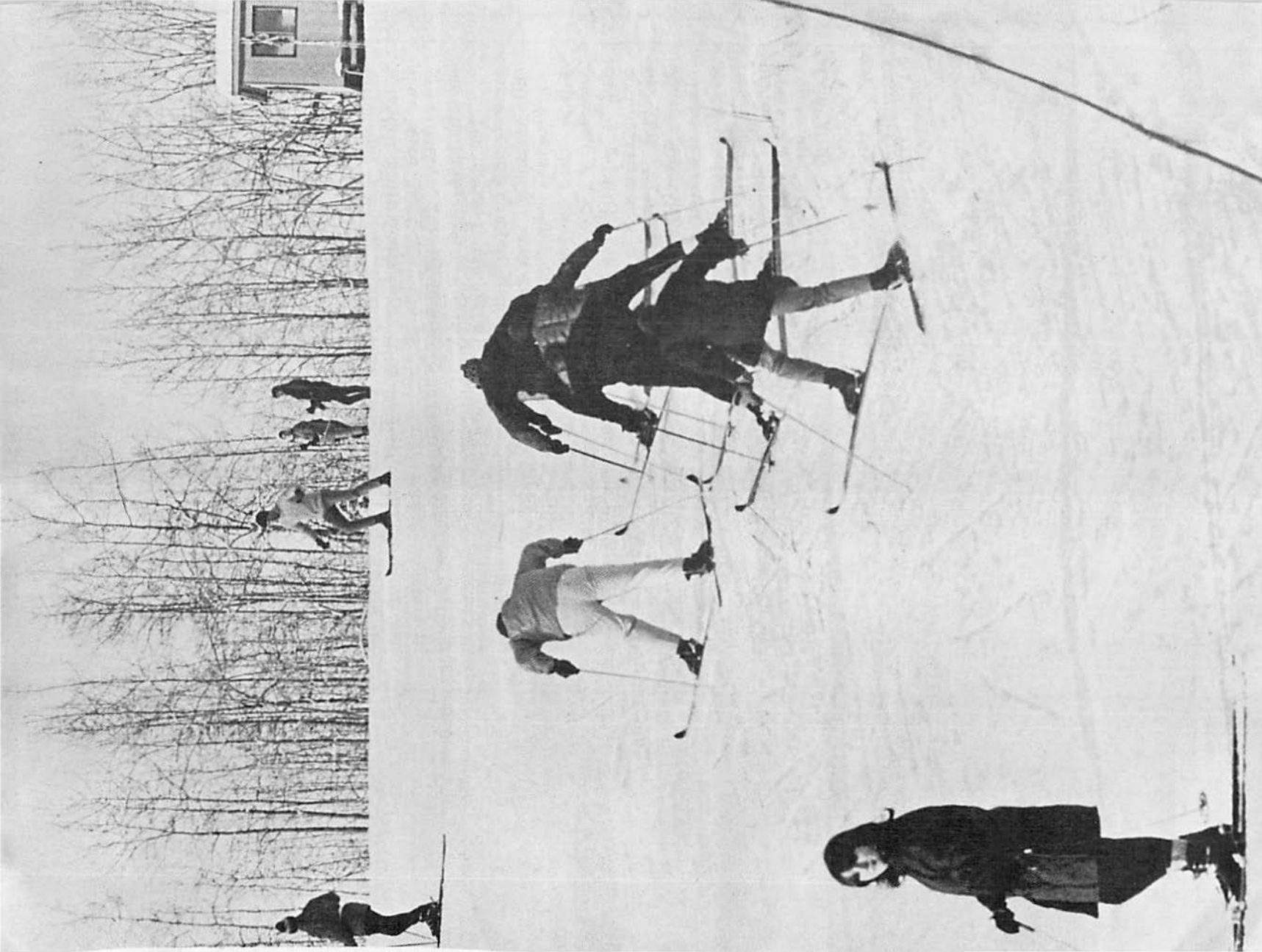
Forest Service, U.S. Department of Agriculture — The Institute of Northern Forestry, a unit of the Pacific Northwest Forest and Range Experiment Station, maintains and operates a Forestry Sciences Laboratory on the campus. Research at this laboratory is focused upon the management, protection, and utilization of Alaska's boreal forests. Active programs are underway in the ecology and growth requirements of sub-arctic forests, fire control methods, and forest entomology. Although field work is conducted throughout the boreal forest in Alaska, the 12,500-acre Bonanza Creek Experimental Forest, 23 miles from the campus, has been and will continue to be a convenient research facility for Forest Service and University scientists.

U.S. Coast and Geodetic Survey — The College Magnetic and Seismological Observatory is operated by the U.S. 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 expanded

to 19 buildings and operates 28 instruments that continuously gather data for studies in the fields of geomagnetism and seismology. Prior to 1948 the magnetic observatory was at a different location on the University of Alaska campus. From 1941 to 1946 the observatory was operated by the Department of Terrestrial Magnetism, Carnegie Institution of Washington, in cooperation with the University of Alaska, and then by the U.S. Coast and Geodetic Survey until 1948. The piers used for the magnetic instruments from 1941 to 1948 were the same ones that were used for the Second International Polar Year (1932-1934). The operation of the seismic equipment dates back to 1935.

The general mission of the observatory is to produce accurate and comprehensive data in the fields of geomagnetism and seismology, and to cooperate with other scientists and organizations in making studies in various scientific disciplines, within the capability of personnel and facilities. The observatory monitors seismic and magnetic activity 24 hours a day. It is part of the Pacific Seismic Sea Way Warning System with headquarters in Honolulu, Hawaii, and the Alaska Seismic Sea Wave Warning System whose nerve center is at Palmer, Alaska. The facility plays a major part in keeping the people of Alaska informed of current earthquake activity and informing scientific organizations of the occurrence of major world magnetic events.

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



WALTER J. MUELLER — 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.

COLLEGE OF ARTS AND LETTERS

UNDERGRADUATE DEGREES — The College of Arts and Letters offers the Associate of Arts degree with majors in Liberal Arts and Vocational Art, the Bachelor of Music degree, and the 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 minors for the Bachelor of Arts in these subjects.

GRADUATE DEGREES — The College of Arts and Letters offers the Master of Arts degree in English and French and the Master of Fine Arts degree in Creative Writing. Students also may earn an M.A. or M.F.A. degree in other fields through an interdisciplinary program. The Master of Arts in Teaching is also offered.

Department of Art

<i>Acting Department Head and Associate Professor:</i>	L. Stanley Zielinski
<i>Associate Professor:</i>	Helmut Van Flein
<i>Distinguished Associate:</i>	Fred Machetanz
<i>Assistant Professors:</i>	Glen C. Simpson
Terence T. Choy	

Department of English

<i>Acting Department Head and Associate Professor:</i>	John W. Bernet
<i>Professors:</i>	Gertrude G. Rasche
	Charles J. Keim
<i>Associate Professor:</i>	I. June Duncan
<i>Assistant Professors:</i>	
W. Raymond Allen	Oliver P. Everette
William W. Bonney	Robert E. Haines
Nancy M. Crawford	Dudley L. Hascall
Russell L. Currier	Susan D. Kalen
	Mary H. Slotnick
	Robert A. Terry
	Hilton J. Wolfe

Instructors:
 George R. Allen Anne San Chez Patricia Sheehan

Department of Journalism

Department Head and Assistant Professor: Kurt F. Reinwand
Distinguished Associate: Lawrence Davies
Professor: Jimmy Bedford Charles J. Keim
Associate Professor: Lyle E. Harris

Department of Linguistics and Foreign Languages

Department Head and Professor: Bruce R. Gordon

Professor: Michael E. Krauss Walter J. Mueller
Associate Professors: Wolf Hollerbach Louis L. Renner
Assistant Professors:
 Angel B. Chamorro Charles H. Parr Monique J. Pourny
 Jang Koo
Instructor: Irene E. Reed
Lecturers: Christa Hollerbach Renata Van Enkevort

Department of Music

Department Head and Associate Professor: Duane J. Mikow
Professors: Jean-Paul Billaud Charles W. Davis
Associate Professor: Greeta K. Brown
Assistant Professors:
 Philip E. Brink David N. Williams Gordon B. Wright
Lecturer: Paul Rosenthal

Department of Philosophy

Department Head and Professor: Rudolph W. Krejci
Associate Professor: Walter J. Benesch

Department of Speech, Drama and Radio

Acting Department Head and Assistant Professor: Walter G. Ensign, Jr.
Professors: John R. Cochran Lee H. Salisbury
Associate Professor: Charles M. Northrip
Assistant Professors: Phyllis E. Phillips Theda Sue Pittman
 Donald P. Upham Dennis L. Yen
Broadcast Instructor: John T. Duncan

WENDELL W. WOLFE — 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.

**COLLEGE
OF BEHAVIORAL
SCIENCES
AND EDUCATION**

UNDERGRADUATE DEGREES — The college has programs that lead to Bachelor of Arts degrees in anthropology, physical education, 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, home economics, physical education, psychology, and sociology. The Associate of Arts degree in behavioral sciences also is offered.

GRADUATE DEGREES — Master of Arts in anthropology; Master of Arts in teaching; Master of Science in counseling psychology; Master of Education, and Educational Specialist.

Department of Anthropology

<i>Department Head and Associate Professor:</i>	William Loyens
<i>Assistant Professors:</i>	John P. Cook Catherine W. Mecklenburg
<i>Instructor:</i>	Annette E. Erkin

Department of Education

<i>Department Head and Associate Professor:</i>	Frank Darnell
<i>Professor:</i>	Charles K. Ray
<i>Associate Professors:</i>	
Ronald Carter	Winifred Lande
Joan B. Clutts	Dana Moore
Arnold A. Griesse	William K. Pennebaker
<i>Assistant Professors:</i>	Raymond J. Barnhardt
	James M. Orvik
<i>Instructor:</i>	Lary Schafer

Department of Health, Physical Education and Recreation

<i>Department Head and Associate Professor:</i>	John Gilmore
<i>Associate Professor:</i>	Allen R. Svenningson
<i>Assistant Professors:</i>	Theresa H. Tomczak
<i>Instructors:</i>	Frederick M. Stevenson
	Alan H. Silver

Department of Home Economics

<i>Department Head and Associate Professor:</i>	Ann L. Walsh
<i>Assistant Professors:</i>	Jewel B. Smith
<i>Supervisor of Nursery School:</i>	Melissa Muchewicz

Department of Military Science

<i>Department Head and Professor:</i>	Edmund J. Kennedy III, Lt. Col.
<i>Assistant Professors:</i>	
William C. Hearn, Capt.	Lucien R. Prokopowich, Lt. Col.
<i>Instructors:</i>	
James E. Gilreath	Francis L. Kelsey
	Evan G. McGowan

Department of Psychology and Sociology

<i>Department Head and Associate Professor:</i>	Sarkis Atamian
<i>Assistant Professors:</i>	
Richard D. Brummett	Nicholas J. Kamplin
Theodore L. Drahn	Richard G. Possenti
LeRoy H. Elam	Nagabhushana Rao
	Joe H. Roberts

COLLEGE OF 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 Degree Programs Section.

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; Master of Arts in Teaching.

Department of Biological Sciences

<i>Department Head and Professor:</i>	L. Gerard Swartz	
<i>Professors:</i>		
Brina Kessel	James E. Morrow	Bonita J. Neiland
<i>Associate Professors:</i>		
Howard M. Feder	David F. Murray	Stephen A. Norrell
Russell D. Guthrie		
<i>Assistant Professors:</i>		
Patrick W. Flanagan	Ronald L. Smith	
<i>Lecturer:</i>	Judith A. Weeden	
<i>Associate in Biology:</i>	Richard B. Lyons	Darrell D. Williams

Department of Land Resources and Agricultural Sciences

<i>Department Head and Associate Professor:</i>	Dwane J. Sykes
<i>Assistant Professor:</i>	Edwin R. Berglund
<i>Associate in Watershed Science:</i>	Charles W. Slaughter

Department of Wildlife Management

<i>Department Head and Professor:</i>	Frederick C. Dean
<i>Professor:</i>	David R. Klein
	Robert B. Weeden
<i>Associate Professor:</i>	Peter C. Lent
	Jack M. Van Hyning
<i>Assistant Professor:</i>	Robert T. Cooney
	Samuel J. Harbo
<i>Associate in Wildlife Management</i>	Robert L. Rausch

Alaska Cooperative Wildlife Research Unit

<i>Leader:</i>	David R. Klein
<i>Assistant Leader:</i>	Frederick C. Dean
	Peter C. Lent

DONALD R THEOPHILUS, ACTING 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 organization which require analytical and decision-making ability; (2) to provide those who wish to prepare themselves for positions of responsibility in industry and government with the

**COLLEGE
OF BUSINESS,
ECONOMICS
AND GOVERNMENT**

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 the 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 and opportunities of economic, political and social development in Alaska and 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 Office Administration, Associate in Police Administration, and Bachelor of Arts.

Graduate Degree — Programs leading to the Master of Business Administration degree, M.A.T. in History, Master of Public Administration, and the Master of Arts in History degree are offered to qualified students.

Department of Accounting

<i>Department Head and Assistant Professor:</i>	Milton Fink
<i>Assistant Professor:</i>	Ruth Hegdal

Department of Business Administration

<i>Department Head and Assistant Professor:</i>	Thomas Schaefer
<i>Associate Professor:</i>	Dale Swanson
<i>Assistant Professors:</i>	Earl Schmidt Howard Zach

Department of Economics

<i>Department Head and Associate Professor:</i>	Richard Solie
<i>Assistant Professors:</i>	
Divakar Chandran M. Saleem Khan	Peter Lin

Department of History

<i>Department Head and Associate Professor:</i>	William Hunt
<i>Professors:</i> Herman Slotnick (<i>sabbatical leave</i>)	Orlando Miller
<i>Associate Professor:</i>	Donald Lynch
<i>Assistant Professors:</i>	Claus Naske Ralph B. Smith
	Peter Cornwall

Department of Office Administration

<i>Department Head and Associate Professor:</i>	Melba Pelosi
<i>Assistant Professors:</i>	Radene Halverson Patricia Turner
<i>Supervisor:</i>	Lelia Whipple

Department of Political Science

<i>Department Head and Associate Professor:</i>	Ronald Chinn
<i>Associate Professor:</i>	Burt English
<i>Assistant Professors:</i>	Richard Fineberg C. Allen Pierce

EARL H. BEISTLINE — DEAN

The objectives of the College of Earth Sciences and Mineral Industry are: to prepare students for their places as contributive citizens; and for professional careers in disciplines such as geography, geology, and mineral industry. The college also seeks 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.

Undergraduate Degrees — The college has programs that lead to a certificate or an Associate in Mineral and Petroleum Technology; Bachelor of Science Degrees in geography, geology, geological engineering, and mining engineering. A Bachelor of Arts degree with majors in geography and 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; a M.A.T. degree is offered in Geology. The Geography Department participates in the interdisciplinary program in Regional Development which may lead to a Master of Science or Master of Arts Degree.

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

The Geology Department offers the Ph.D. degree. Interdisciplinary research and study programs leading to the

**COLLEGE
OF EARTH SCIENCES
AND MINERAL
INDUSTRY**

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 the harmony and efficiency to the work of all for the benefit of the mineral industries of Alaska. In addition, close cooperation is maintained with the U.S. Bureau of Mines and the State Division of Geological Survey.

Department of Geography

Department Head and Professor:

Herbert H. Rasche

Associate Professor:

Donald F. Lynch

Department of Geology

Department Head and Professor:

Carl S. Benson

Professor:

Robert B. Forbes

Associate Professors:

Richard C. Allison

Daniel Hawkins

Don M. Triplehorn

Thomas Hamilton

Assistant Professors:

Donald J. Grybeck

Michael M. Wood

Distinguished Lecturer:

Florence R. Weber

Department of Mineral Engineering

Acting Department Head and Professor:

James M. Orr

Professor:

Earl H. Beistline, P.E.

Donald J. Cook, P.E.

Assistant Professors:

Omar J. Esmail

Frederick C.J. Lu

Lecturer:

Douglas B. Colp, P.E.

Mineral Industry Research Laboratory

Associate Director and Geologist :
Associate Mineral Engineer:
Associate Professor of Coal Technology:

Ernest N. Wolff, P.E.
 Lawrence E. Heiner, P.E.
 P. Dharma Rao

CHARLES E. BEHLKE — 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 research and graduate training where necessary.

Undergraduate Degrees — The college grants the following undergraduate degrees: Associate of Electronic Technology, Bachelor of Arts, Bachelor of Science.

Graduate Degrees — The college offers the following graduate degrees: Master of Arts, Master of Arts in Teaching, Master of Science, Master of (Civil, Electrical, Environmental Health, Mechanical) Engineering, and Doctor of Philosophy.

Departments — Departments in the college include: chemistry, civil engineering, electrical engineering, engineering management, general science, mathematics, mechanical engineering, and physics. The college also includes within its scope the program in electronics technology, the program in environmental health engineering, and the program in oceanography and ocean engineering.

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.

Department of Chemistry

Department Head and Associate Professor:

G. Warren Smith

**COLLEGE
 OF MATHEMATICS,
 PHYSICAL SCIENCES
 AND ENGINEERING**

<i>Professor:</i>		William S. Wilson
<i>Associate Professors:</i>	Charles Genaux	Leo C. Hoskins
<i>Assistant Professors:</i>	Donald Lokken	Henry P. Longerich

Department of Civil Engineering

<i>Department Head and Professor:</i>	John L. Burdick, P.E.
<i>Professors:</i>	
	Charles E. Behlke, P.E. William Mendenhall, Jr., P.E. E.F. Rice, P.E.
<i>Associate Professor:</i>	George R. Knight, P.E.
<i>Lecturer and Supervisor of Laboratories:</i>	K.H. Hobson

Department of Electrical Engineering

<i>Department Head and Associate Professor:</i>	Thomas D. Roberts
<i>Professor:</i>	Howard Bates
<i>Associate Professors:</i>	
	Edward J. Gauss, P.E. N.A. Lindberger
<i>Assistant Professors:</i>	Robert Merritt, P.E.
	Kenneth Kokjer William Sackinger

Department of Engineering Management

<i>Department Head and Associate Professor:</i>	F. Lawrence Bennett, P.E.
<i>Associate Professor:</i>	Ralph Liljelund

Department of General Science

<i>Department Head and Professor:</i>	William S. Wilson
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Department of Mathematics

<i>Department Head and Professor:</i>	Robert W. Brown
<i>Professor:</i>	William R. Cashen
<i>Associate Professors:</i>	
	John O. Distad Phillip A. Van Veldhuizen
<i>Assistant Professors:</i>	
	Patricia Andresen Barbara Lando Robert Sullivan
	Gary A. Gislason Clifton Lando
<i>Instructors:</i>	
	Barbara Williams Susan B. Royer
<i>Lecturer:</i>	Elaine Ensign

Department of Mechanical Engineering

<i>Department Head and Professor:</i>	James B. Tiedemann, P.E.
<i>Associate Professor:</i>	Alexander R. McKay, P.E.
<i>Assistant Professor:</i>	Richard Nelson

Department of Physics

Department Head and Associate Professor:

J. Roger Sheridan

Assistant Professors:

John L. Morack

John S. Murray

Thomas E. Osterkamp

Electronics Technology Program

Program Head and Senior Instructor:

Foye L. Gentry

Senior Instructor:

Richard McWhirter

Instructors:

Robert Bergstrom

Frederick C. Race

Bruce James

Jack E. Downing

Donald W. Thompson

Environmental Health Engineering Program

Program Head and Professor:

R. Sage Murphy

Assistant Professor:

Timothy Tilsworth

Oceanography and Ocean Engineering

Program Head and Professor:

John J. Goering



Degree Programs

ACCOUNTING

College of Business, Economics, and Government

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 an understanding of accounting and to train students for employment in accounting work.

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

1. Complete requirements for a B.B.A. degree listed on page 16.
2. Complete the following required Business Administration courses:

	Credits
B.A. 325 – Financial Management	3
B.A. 331-332 – Business Law	6
B.A. 343 – Marketing	3
B.A. 360 – Production Management	3
B.A. 361 – Industrial Relations	3
B.A. 371 – Business Data Processing	3
B.A. 424 – Managerial Economics	3
Elective – Business Admin. and Economics	0-26

If the sum of all credits in accounting, business, and advanced economics is more than 78, then more than 130 total credits will be required for the degree.

3. Complete the following required Accounting courses:

	Credits
Acc. 101+102 – Elementary Accounting	6
Acc. 210 – Income Tax	3
Acc. 252, 351 – Cost Accounting	6
Acc. 311-312 – Intermediate Accounting	6
Acc. 401-402 – Advanced Accounting	6
Acc. 452 – Auditing	3
Elective – Accounting	0-6

If total accounting credits exceed 33, then more than 130 credits will be required for the degree.

REQUIREMENTS FOR A MINOR IN ACCOUNTING

Acc. 101+102 – Elementary Accounting	6
Acc. 210 – Income Tax	3
Acc. 252, 351 – Cost Accounting	6
Acc. 315 – Analysis of Financial Statements	3

ANTHROPOLOGY**College of Behavioral Sciences and Education**

Degrees — Bachelor of Arts, Bachelor of Science, Master of Arts.

**Minimum Requirements for Degrees: B.A. — 130 Credits; B.S. — 130 Credits;
M.A. — 30 Additional Credits.**

The Anthropology Department offers undergraduate level courses and some opportunities for undergraduate research. Anthropology contributes to an understanding of the complex problems of human behavior; cultural and social organization and the relationship of man to the various environments. Archeological 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 B.A. DEGREE OR B.S. DEGREE WITH AN ANTHROPOLOGY MAJOR

1. Complete general requirements for a B.A. or B.S. degree as listed on page 16.
2. Complete 25 credits in Anthropology exclusive of Anth. 101, including:

	Credits
Anth. 203 — World Ethnography: Old World	3
Anth. 204 — World Ethnography: New World, Pacific	3
Anth. 214 — Archeology	4
Anth. 303 — Culture History	3
Anth. 401 — Primate and Human Evolution	4
Anth. 423 — Social Structure	3
Anth. 424 — Primitive Religion	3
Anth. 498 — Thesis or Project	2

3. Complete the following:

Psy. 101 — Introduction to Psychology	3
Phil. 201 — Intro. to Philosophy	3
or	
Soc. 101 — Intro. to Sociology	3
Geol. 101 or 102 — General or Historical Geology	4
or	
Biol. 105 — Fundamentals of Biology	4

A MINOR IN ANTHROPOLOGY REQUIRES 12 HOURS IN ANTHROPOLOGY IN ADDITION TO ANTH. 101.

REQUIREMENTS FOR M.A. DEGREE WITH AN ANTHROPOLOGY MAJOR

The graduate program allows for specialization in the field of anthropology. Students who wish to add linguistics may do so by taking courses in the Department of Linguistics and Foreign Languages by special arrangement.

Requirements for the degree: The master's degree requires 30 semester hours of anthropology and related subjects, which are divided as follows:

- 12 credit hours of graduate courses in anthropology
- 6 credit hours for thesis
- 12 credit hours in related subjects

Language: The need for a language or a suitable substitute shall be determined by the student and his advisory committee.

Of these credit hours a maximum of nine may be transferred from another institution.

Examination: The candidate will take a comprehensive written examination after the completion of the course work, and after completion of the thesis be called for a brief defense of the methods involved in its writing and the basis for its facts.

APPLIED STATISTICS PROGRAM

College of Mathematics, Physical Sciences and Engineering

The Applied Statistics Program is designed to strengthen and consolidate the applied statistics teaching and consulting functions. The program, a non-degree granting one, is supervised by an interdisciplinary committee of selected staff members from the academic colleges and research institutes. The committee makes recommendations concerning the applied statistics course offerings, supervises the teaching program, provides a mechanism for statistical consulting services for other units of the University and serves as a focal point for applied statistics-related activities.

The applied statistics courses are taught by faculty members holding joint appointments in the Applied Statistics Program and other units of the University. As demand and circumstances warrant, short courses or seminars covering specialized areas of applied statistics, for which the University has limited expertise, will be presented by utilizing experts from outside the University.

ART

College of Arts and Letters

Degrees — Associate of Arts in Vocational Art, Bachelor of Arts

Minimum Requirements for Degrees: A.V.A. — 60 Credits; B.A. — 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) |
| | Engl. 67 and 68 — Elementary Exposition | |
| | or | |
| | Engl. 111 — Methods of Written Communication | |
| | and Engl. 211 — Advanced Composition, with Modes of Literature | |
| | or Engl. 213 — Advanced Exposition | 6 |
| | American Government | |
| | or | |
| | American History | 6 |
| B. | General Requirements | (18) |
| | At least six credits each in three areas below: | |
| | 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 55-56 — Elementary Drawing | 4 |
| | or | |
| | Art 105-106 — Freehand Drawing | 4 |
| | Art 57-58 — Elementary Printmaking | 4 |
| | or | |
| | Art 207-208 — Beginning Printmaking | 4 |
| | Art 59-60 — Elementary Metalcraft | 6 |
| | or | |
| | Art 209-210 — Beginning Metalcraft | 6 |
| | Art 61-62 — Elementary Sculpture | 6 |
| | or | |
| | Art 211-212 — Beginning Sculpture | 6 |
| | Art 63-64 — Elementary Oil Painting | 6 |
| | or | |
| | Art 213-214 — Beginning Oil Painting | 6 |
| | Art 65-66 — Elementary History of World Arts | 6 |
| | or | |
| | Art 261-262 — History of World Art | 6 |
| B. | Electives | (4-16) |

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 four credits, not exceeding a maximum of six credits in the area of his strongest interests and artistic inclinations.

REQUIREMENTS FOR B.A. DEGREE WITH AN ART MAJOR

1. Complete general requirements for a B.A. degree as listed on page 16.
2. 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.
3. Complete the following courses in Art:

Art 105-106 — Freehand Drawing	4
Art 207-208 — Beginning Printmaking	4
Art 211-212 — Beginning Sculpture	6
Art 213-214 — 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	2
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.

A minor in Art requires 12 hours of approved art courses.

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.

AVIATION TECHNOLOGY PROGRAM

Anchorage Community College

Degree — Associate in Aviation Technology with specialties in airframe and powerplant, air traffic control, aviation administration or pilot training.

Minimum Requirements for Degree — A.A.T. — 62-70 Credits

REQUIREMENTS AND CURRICULUM FOR AN ASSOCIATE DEGREE IN AVIATION TECHNOLOGY

- | | | |
|----|--|------|
| I. | Major in Airframe and Powerplant | (70) |
| A. | General Requirements | (12) |
| | English | 6 |
| | Engl. 89 — Introduction to Report Writing or | |
| | O.A. 231 — Business Correspondence | 3 |
| | Math. 105 — Intermediate Algebra | 3 |

B.	Major Specialty Requirements	(58)
	A.T. 102, 104, 106, 170, 172, 174, 176, 178, 180, 182, 184, 186, 188, 190, 192, 194, 196, 198, 200, 202, 204, 206, 208, 210, 212, 214, 216, 218, 220, 222, 224, 226, 228, 230, 232, 234, 236, 238, 240, 242, 244, 246, 248, 250, 252.	
II.	Major in Air Traffic Control	(63-68)
A.	General Requirements	(29)
	English	6
	Public Speaking	6
	Math. 105 — Intermediate Algebra	3
	Psychology or Sociology elective	6
	CIS 101 — Introduction to Data Processing	3
	B.A. 294 — Computer Programming Languages	3
	O.A. 103 — Elementary Typewriting	2
B.	Major Specialty Requirements	(34-39)
	A.T. 102, 104, 106, 114, 116, 120, 122, 124, 126, 128, 130, 132.	
III.	Major in Aviation Administration	(62)
A.	General Requirements	(29-30)
	English	6
	Public Speaking	3
	Mathematics	2-3
	O.A. 103 — Elementary Typewriting	2
	CIS 101 — Introduction to Data Processing	3
	Acc. 101, 102 — Elementary Accounting	6
	Psychology or Sociology elective	6
B.	Major Specialty Requirements	(32-33)
	A.T. 102, 104, 106, 114, 116, 134, 136, 138, 140, 142, 144, 146.	
IV.	Major in Pilot Training	(65)
A.	General Requirements	(16)
	English	6
	Public Speaking	3
	Math. 107 — College Algebra	3
	Math. 108 — Trigonometry	2
	O.A. 103 — Elementary Typewriting	2
B.	Major Specialty Requirements	(49)
	A.T. 100, 102, 104, 106, 108, 110, 112, 114, 116, 148, 150, 152, 154, 156, 158, 160.	

BEHAVIORAL SCIENCE**College of Behavioral Sciences and Education****Degree — Associate of Arts in Behavioral Science****Minimum Requirements for Degree: 63 Credits****REQUIREMENTS FOR AN ASSOCIATE OF ARTS DEGREE WITH A MAJOR IN BEHAVIORAL SCIENCE**

I. General Education	Credits
A. Specific Requirements	(14)
Engl. 67 — Elementary Exposition	
or	
Engl. 111 — Methods of Written Communication	3
Engl. 68 — Elementary Exposition	
or	
Engl. 211 — Adv. Composition with Modes of Literature	
or	
Engl. 213 — Advanced Exposition	3
P.S. 101,102 — American Govt.; Intro. to Pol. Sci.	
or	
Hist. 131,132 — History of the U.S.	6
Sp.C. 51 — Basic Speech Communication Skills	
or	
Sp.C. 111 — Fund. of Oral Communication	2 or 3
B. General Requirements	(19)
Humanities	(6)
Engl. 213 — Advanced Exposition	3
Elective	3
Behavioral Sciences	(6)
Psy. 101 — Intro. to Psychology	3
Soc. 101 — Intro. to Sociology	3
Natural Sciences	
Free Electives	
Mathematics	
Free Electives	
Other	(7)
O.A. 99 — Office Practicum	2
O.A. 103 — Elementary Typing	2
Free Electives	3
II. Major Speciality	
A. Requirements	(15)
B.S. 101 — Field Observation	3
B.S. 201 — Field Practice	3
B.S. 251 — Research Principles	3
Psy. 201 — Advanced General Psychology	3
Soc. 102 — Intro. to Sociology	3

B. Electives	(15)
Anth. 202 — Cultural Anthropology	3
Psy. 223 — Intro. to Counseling	3
Soc. 106 — Social Welfare	3
Soc. 109 — Principles of Case Work	3
Soc. 201 — Social Problems	3
Soc. 210 — Principles of Correction	3
Free Electives	6

A total of 63 credits is required for graduation.

BIOLOGICAL SCIENCES

College of Biological Sciences and Renewable Resources

Degrees — Bachelor of Arts, Bachelor of Science, Master of Science, Master of Arts in Teaching

Minimum Requirements for Degrees: B.A. — 130 Credits; B.S. — 130 Credits; M.S. — 30 Additional Credits; M.A.T. — 30 Additional Credits; Ph.D. (Interdisciplinary)

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 B.S. degree may have majors in biological sciences. The B.A. degree includes fewer credits in the major field, but gives greater emphasis in the fields of social sciences and humanities and allows a greater breadth of subject matter in the curricula. The B.S. degree includes 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.

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

1. Complete the general requirements for a B.A. degree as listed on page 16.
2. Complete the following courses:

Biol. 105-210-302-303 and at least 16 additional credits in biology, a majority of which should be at the upper division level.*

Chemistry — one year
Mathematics — one year

A MINOR IN BIOLOGY SCIENCES REQUIRES 14 CREDITS OF BIOLOGY.

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

1. Complete the general requirements for a B.S. degree as listed on page 16.
2. Complete the following courses:
 Biol. 105-210-302-303 and at least 21 additional credits in biology, a majority of which should be at the upper division level.*
 Mathematics — one year**
 Chem. 105-106
 Phys. 103-104
 Organic Chemistry — one semester
 Foreign language or introductory linguistics — one year***

STUDENTS FROM OTHER DEPARTMENTS

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 16.

REQUIREMENTS FOR 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. Completion of the general requirements for a graduate degree as listed on page 18.
3. Students working in subject areas involving significant non-English literature may be expected to read the appropriate foreign language.

REQUIREMENTS FOR M.A.T. DEGREE

Persons interested in this degree program should see the head of the department.

REQUIREMENTS FOR Ph.D. DEGREE

See page 20 for degree requirements.

*Students preparing to enter professional schools (medical, dental, veterinary, etc.) may substitute up to eight credits in the B.A. program or 12 credits in the B.S. program of approved chemistry courses for some of these additional credits.

**Suitable mathematics sequences include Math. 106-200; Math. 107-108-109, Math. 106 and Applied Stat. 301.

***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 with a grade of "C" or better, may, with advisor's approval, substitute an equivalent number of credits in the humanities area.

BUSINESS ADMINISTRATION**College of Business, Economics and Government****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 field 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 16.
2. Complete the following foundation courses:

Acc. 101 + 102 — Elementary Accounting	5-6
B.A. 331-332 — Business Law	6
B.A. 325 — Financial Management	3
B.A. 343 — Principles of Marketing	3
B.A. 360 — Production Management	3
B.A. 371 — Business Data Processing	3
B.A. 372 — Business Simulation	3
B.A. 462 — Administrative Policy	3
B.A. 490 — Social Problems of Business	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
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 Analysis of Retailing Management	3
B.A. 444 — Industrial Marketing	3
Finance	
B.A. 423 — Investment Management	3
B.A. 425 — Advanced Corporate Financial Problems	3
Acc. 315 — 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 18 of the catalog. (Note that no foreign language requirement is involved in the Master of Business Administration degree.)
2. Completion of a minimum of 30 semester hours of required courses in business administration and economics, including a thesis or research project, as approved by the candidate's graduate committee. No more than nine semester hours of 300 or 400 level courses may be counted toward the MBA degree.
3. Completion of a thesis or research project, which normally will carry no more than six semester hours of credit. Under unusual conditions and upon petition thesis credit may be granted beyond the traditional six. Thesis credit and research project credit apply toward the 30 required hours. (Decisions on thesis or research project are the sole prerogative of the candidate's supervisory committee.)
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 or research project has been approved, covering the student's field of specialization and thesis or research project content.

CHEMICAL ENGINEERING

Chemistry Department, College of Mathematics, Physical Sciences and Engineering

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 out 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 University does not offer a full four-year curriculum in chemical engineering but hopes to do so in the future. The first two years of the curriculum for the B.S. degree with a major in chemistry will, in general, prepare a student to transfer into chemical engineering at other institutions. However, it would be wise for students to consult the catalogs of institutions to which they might transfer and plan their two years at the University of Alaska to conform to their requirements.

CHEMISTRY

College of Mathematics, Physical Sciences and Engineering

Degrees — Bachelor of Arts, Bachelor of Science, Master of Arts, Master of Arts in Teaching, Master of Science, Doctor of Philosophy (interdisciplinary).

Minimum Requirements for Degrees: B.A., B.S. — 130 Credits; M.A., M.A.T., M.S. — 30 Additional Credits; Ph.D. (interdisciplinary) — No Fixed Credits.

Graduates in chemistry qualify in many fields; as teachers of chemistry, supervisors in industry, technical sales personnel; research chemists in federal, state, municipal, academic or industrial laboratories, in pre-medicine 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. 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 primary purpose of our program is to provide the educational basis for creative scientists or engineers who are so vital to the future development of the nation and the State of Alaska. In particular, the Chemistry Department encourages study of chemical problems associated with the Arctic in order to provide qualified staff for schools and laboratories in Alaska. After the introductory courses, the curriculum is planned first for the student majoring in the broad field of chemistry and, second, for the non-major who is primarily interested in other aspects of the physical or biological sciences, but who requires competency in the theories and techniques of contemporary chemistry to achieve in his chosen field. Such service courses and programs are an outstanding feature of the department.

The department offers the student well-equipped laboratories housing instrumentation for nuclear magnetic resonance and electron spin resonance spectrometry, high resolution infrared, ultraviolet and visible spectrophotometry, gas chromatography, x-ray diffraction, and carbon-hydrogen-nitrogen analysis. Additional equipment, such as mass spectrometers, amino acid analyzers, and atomic absorption instruments, are available in cooperation with other departments and institutes at the University.

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

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

1. Complete the general requirements for a B.A. degree listed on page 16.
2. Complete the following Chemistry courses:

Chem. 105-106 — General Chemistry	8
or	
Chem. 211 — Chemical Principles	4-8
Chem. 212 — Intro. Quantitative Analysis	4
Chem. 321-322 — Organic Chemistry	6
Chem. 324 — Organic Chemistry	3
Chem. 331-332 — Physical Chemistry	6
Chem. 333-334 — Physical Chemistry Lab	2
Chem. 416 — Instrumental Chem. Analysis	4
Chem. 491-492 — Seminar (as seniors)	2
Math. 201-202 — Calculus	12
Phys. 103-104 — College Physics	8
or	
Phys. 211-212 — General Physics	8

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

1. Complete the general requirements for a B.S. degree listed on page 16.
2. Complete the Chemistry courses required for a B.A. degree with a major in Chemistry as listed above.†
3. Complete the following additional Chemistry courses:

Chem. 402 — Inorganic Chemistry	3
**Chem. 421 — Adv. Organic Chemistry	3
or	
**Chem. 425 — Adv. Organic Laboratory	3
or	
**Chem. 431 — Adv. Physical Chemistry	3
or	
**Chem. 451 — General Biochemistry	4
Chem. 495-496 — Research	4
Germ. 101-102 — Elementary German	
or	
Russ. 101-102 — Elementary Russian	10

† Except: Physics 211-212 is required.

Registration in Chem. 491-492 is required.
during both junior (0 credit) and senior years (2 credits).

SUGGESTED CURRICULUM FOR B.S. DEGREE WITH A MAJOR IN CHEMISTRY

FALL SEMESTER

FIRST YEAR 16 or 16½ Credits

Chem. 105 — Gen. Chem. & Intro.

Qualitative Analysis

or

Chem. 211 — Chemical Principles 4

Math. 200 — Calculus 4

Engl. 111 — Methods of Written

Communication 3

P.E. or Mil. Sci. 1 or 1½

*Social Science Elective 4

SECOND YEAR

16 or 16½ Credits

Chem. 212 — Intro. Quant. Analysis

or

*Electives 4

Chem. 321 — Organic Chemistry 3

Math. 202 — Calculus 4

Phys. 211 — Gen. Physics 4

P.E. or Mil. Sci. 1 or 1½

THIRD YEAR

16 or 17 Credits

Chem. 331 — Physical Chemistry 3

Chem. 333 — Physical Chem. Lab. 1

German or Russian 101 5

Chem. 491 — Seminar 0

*Electives 7 or 8

FOURTH YEAR

16 or 18 Credits

**Chem. 421 — Adv. Organic Chem. 3

or

**Chem. 425 — Adv. Organic Lab. 3

or

**Chem. 431 — Adv. Physical Chem. 3

or

**Chem. 451 — Gen. Biochemistry 4

Chem. 491 — Seminar 1

Chem. 495 — Research 2-4

*Electives 7-10

SPRING SEMESTER

16 or 16½ Credits

Chem. 106 — General Chem. & Intro.

Qualitative Analysis

or

Chem. 212 — Intro. Quant. Analysis 4

Math. 201 — Calculus 4

Sp.C. 111 — Fund. of Oral

Communications 3

P.E. or Mil. Sci. 1 or 1½

*Social Science Elective 4

17 or 17½ Credits

Chem. 322 — Organic Chemistry 3

Chem. 324 — Organic Laboratory 3

Phys. 212 — Gen. Physics 4

P.E. or Mil. Sci. 1 or 1½

*Electives 6

16 or 18 Credits

Chem. 332 — Physical Chemistry 3

Chem. 334 — Physical Chem. Lab. 1

Chem. 416 — Inst. Chem. Analysis 4

or

Chem. 402 — Inorganic Chem. 3

German or Russian 102 5

Chem. 492 — Seminar 0

*Electives 4 or 5

16 or 18 Credits

Chem. 416 — Inst. Chem. Analysis 4

or

Chem. 402 — Inorganic Chem. 3

Chem. 492 — Seminar 1

Chem. 496 — Research 2-4

*Electives 7-12

*A minimum of 130 credits must be earned. This curriculum meets the suggested minimum standards of the American Chemical Society, but additional advanced courses in chemistry may be elected with the approval of the Department of Chemistry. Graduates are certified by the American Chemical Society on completion of appropriate courses.

**Advanced courses in mathematics, geology, physics or biological sciences may be substituted with the approval of the Department of Chemistry.

REQUIREMENTS FOR A MINOR IN CHEMISTRY

A minor in chemistry requires 12 credits above the foundation courses (Chem. 105-106 or Chem. 211) approved by the head of the chemistry department .

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

1. A minimum of 30 credits of approved courses including Chem. 697, 698 Thesis.
2. Completion of the general graduate degree requirements listed on page 18.

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.

REQUIREMENTS FOR M.A.T. DEGREE

Persons interested in this degree program should see the head of the department.

REQUIREMENTS FOR PH.D. DEGREE

Completion of the requirements for the doctoral degree set forth on page 20.
Persons interested in this degree program should write to the Vice-President for Research and Advanced Study, outlining in some detail previous training and interest for future study.

CIVIL ENGINEERING

College of Mathematics, Physical Sciences and Engineering

Degrees — Bachelor of Science (Engineering Science), Master of Civil Engineering, Master of Science

Minimum Requirements for Degrees: B.S. — 130 Credits; M.S. — 160 Credits;
M.C.E. — 160 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 be required to take a comprehensive examination in their general field. (Completion of the State of Alaska Engineering-In-Training Examination will satisfy this requirement).

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 Master of Science in Civil Engineering degree.

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

FALL SEMESTER

FIRST YEAR	16 or 16½ Credits
Engl. 111—Methods of Written Communication	3
Math. 200—Calculus	4
E.S. 101—Graphics	2
E.S. 111—Engineering Science	3
Econ. 121—Principles of Econ.	3
P.E. or Mil. Sci.	1 or 1½

SECOND YEAR	16 or 16½ Credits
Math. 202—Calculus	4
Phys. 211—Gen. Physics	4
E.S. 201—Computer Techniques	3
Chem. (Approved)	4
P.E. or Mil. Sci.	1 or 1½

THIRD YEAR	18 Credits
E.S. 301—Engr. Analysis	3
E.S. 307—Elem. of Electr. Engr.	4
E.S. 331—Mech. of Materials	3
E.S. 341—Fluid Mechanics	4
Geol. 101—General Geology	4

FOURTH YEAR	16 Credits
C.E. 435—Soil Mechanics	3
C.E. 441—Sanitary Engineering	3
C.E. 431—Structural Analysis	4
C.E. 415—Surveying	3
Elective	3

SPRING SEMESTER

	16 or 16½ Credits
Sp.C. 111—Fund. of Oral Communication ..	3
Math. 201—Calculus	4
E.S. 102—Graphics	2
C.E. 112—Elementary Surveying	3
Social Science Elective	3
P.E. or Mil. Sci.	1 or 1½

	16 or 16½ Credits
Math. 302—Diff. Equations	3
Phys. 212—Gen. Physics	4
E.S. 208—Mechanics	4
Chem. (Approved)	4
P.E. or Mil. Sci.	1 or 1½

	15 Credits
C.E. 334—Phys. Prop. of Mat.	3
E.S. 346—Basic Thermodynamics	3
E.S. 308—Instr. & Measurement	3
Engl. 211—Adv. Comp. and Modes of Lit. ...	3
or	
Engl. 213—Adv. Exposition	3
C.E. 344—Water Res. Engineering	3

	17 Credits
E.S. 450—Engr. Mgmt. & Oper.	3
C.E. 402—Transportation Engr.	2
C.E. 422—Foundation Engineering	2
C.E. 432—Structural Design	4
Social Science Elective	3
Technical Elective	3

REQUIREMENTS FOR THE MASTER OF CIVIL ENGINEERING DEGREE

Students entering the Master of Civil Engineering program should have completed a bachelor's degree in engineering.

A student will elect a Civil Engineering program approved by his graduate committee. Thirty semester credits of approved courses beyond the B.S. degree are required. M.C.E. candidates will have passed a State Engineer-in-Training Examination prior to the awarding of the degree.

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 18) plus the following: Thirty semester hours of credit approved by his graduate committee of which six to twelve hours will be C.E. 697, 698.

COMPUTER INFORMATION SYSTEMS

Business Administration Department, College of Business, Economics and Government

Degree — Associate in Computer Information Systems

Minimum Requirements for Degree: A.C.I.S. — 63 Credits.

REQUIREMENTS FOR AN ASSOCIATE IN COMPUTER INFORMATION SYSTEMS

I. General Education Requirements:	Credits
A. Specific:	(15)
English	6
Political Science or American History (in sequence)	6
Speech	3
B. General:	(23)
Mathematics	
Math 107 (College Algebra)	3
Math 108 (Trigonometry)	2
Math 110 (Mathematics of Finance)	3
A.S. 301 (Elementary Probability and Statistics)	3
Other	
Acc. 101 (Elementary Accounting)	3
Acc. 102 (Elementary Accounting)	3
CIS 101 (Introduction to Data Processing)	3
BA 371 (Business Data Processing)	3

II. Major Specialty:	(19)
CIS 100 (Introduction to FORTRAN)	2
CIS 104 (Operations Management)	3
CIS 201 (COBOL)	3
CIS 202 (Principles of Programming with Business Applications)	3
CIS 210 (Systems Design and Analysis)	4
BA 253 (Business Practicum)	1
BA 372 (Business Simulation)	3
III. Electives (any two courses)	(6)
BA 151 (Introduction to Business)	3
CIS 103 (Techniques of Organization)	3
CIS 209 (Introduction to Operating Systems)	3
CIS 220 (Basic Programming Languages)	3

DENTISTRY (see Health Sciences, Pre-professional Curricula)

ECONOMICS

College of Business, Economics and Government

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 B.A. DEGREE WITH AN ECONOMICS MAJOR

- Complete general requirements for a B.A. degree listed on page 16.
- Complete the following additional foundation courses:

Acc. 101 — Elementary Accounting	3
Econ. 121-122 — Principles of Economics	6
Behavioral Sciences: Psychology, Sociology, Anthropology	9
Math. 121-122 — Elementary Functions and Modern Algebra	8
or	
Math. 106 — College Algebra and Trigonometry	5
Math. 200 — Calculus	4
P.S. 101-102 — American Government and Political Science	6

3. Complete 27 additional credits in Economics, including:

Econ. 221 — Intro. to Statistics for Economics and Business	3
Econ. 321 — Intermediate Microeconomic Theory	3
Econ. 324 — Intermediate Macroeconomic Theory	3
Econ. 472 — Seminar in Contemporary Economic Problems	3
Electives in Economics	15
(Six hours of the following courses may be included: B.A. 325, 343, 359, 371, 372, 423, 424, 425, 480 and Geog. 103.)	

A MINOR IN ECONOMICS REQUIRES 15 CREDITS IN ECONOMICS.

EDUCATION

College of Behavioral Sciences and Education

Degrees — Bachelor of Education, Master of Education, Master of Arts in Teaching, Educational Specialist

Minimum Requirements for Degrees: B.Ed. — 130 Credits; M.Ed. — 30 Additional Credits; M.A.T. — 30 Additional Credits; Ed.S. — 60 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 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 the Teacher Education Program. Students should consult with the head of the Education Department at the beginning of their sophomore year to initiate procedures for formal application for admission to the Teacher Education Program. Enrollment in education courses in no way implies admission to the Teacher Education Program.

REQUIREMENTS FOR B.Ed. DEGREE WITH AN ELEMENTARY EDUCATION MAJOR

1. **Military Science or Physical Education (two years)** 6-4
2. **Humanities (Art, English, Languages, Linguistics, Music, Philosophy, Speech)** (20)
 - a. **Required Courses:**
 - Engl. 111 — Meth. of Written Communications (3) and
 - Engl. 211 — Adv. Composition with Modes of Literature (3) or Engl. 213 — Adv. Exposition 6
 - Engl. 318 — Modern Grammar 3
 - b. **Recommended Courses:**
 - Engl. 213 — Advanced Exposition 3
 - Mus. 309 — Elementary School Music Methods 3
 - Phil. 201 — Introduction to Philosophy 3
 - Sp.C. 111 — Fund. of Oral Communication (3) or Sp.C. 241 — Public Speaking I (3) or Sp.C. 211 — Voice and Diction (2) 3 or 2
3. **Social Sciences (Anthropology, Economics, Geography, History, H.E. 236, Political Science, Psychology, Sociology)** (24)
 - a. **Required Courses:**
 - Hist. 101-102 — Western Civilization 6
 - or
 - Hist. 131-132 — History of the U.S. 6
 - P.S. 101-102 — Intro. to American Government and Political Science 6
 - Psy. 101 — Introduction to Psychology 3
 - Psy. 245 — Child Development 3
 - b. **Recommended Courses:**
 - Econ. 121-122 — Principles of Economics 6
 - Anth. 101 — The Study of Man 3
 - Anth. 342 — Anthropology of the Natives of Alaska 3
 - Geog. 101 — Introductory Geography 3
 - Hist. 341 — History of Alaska 3
 - Soc. 101-102 — Introduction to Sociology 6
4. **Mathematics** (6)

(Students are advised to take Math. 105 and Math. 121 or Math. 345)
5. **Natural Sciences (Anth. 401, Biological Sciences, Chemistry, Geog. 105-401, Geology, Physics)** (6)
6. **Education (students must maintain a 2.00 average in all education courses)** (30)
 - a. **Required Courses:**
 - Ed. 313 — Education Psychology 3
 - Ed. 332 — Tests and Measurements 3
 - Ed. 409 — The Teaching of Reading 3
 - *Ed. 452 — Student Teaching 6
 - *Candidates who have taught successfully two 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 | 3 |
| Ed. 309 — Elementary School Music Methods | 3 |
| Ed. 311 — Audio Visual Methods and Materials | 3 |
- c. Six credits from the following courses:
- | | |
|---|---|
| Ed. 345 — Sociology of Education | 3 |
| Ed. 348 — History of Education | 3 |
| Ed. 422 — Philosophy of Education | 3 |
| Ed. 426 — Principles and Practices of Guidance | 3 |
| Ed. 446 — Public School Organization, Control and 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 | Physical Education |
| English | Physics |
| French | Political Science |
| Geography | Psychology |
| Geology | Russian |
| German | Spanish |
| History | Speech |
| | 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, 24 of which must be completed at the University of Alaska.
9. Sufficient free electives to total 130 credits.

REQUIREMENTS FOR B.Ed. DEGREE WITH A SECONDARY EDUCATION MAJOR

- Military Science or Physical Ed. (two years) (6-4)
- Humanities (Art, English, Languages, Linguistics, Music, Philosophy, Speech) (20)
 - Required Courses:

Engl. 111 — Meth. of Written Communication (3) and	
Engl. 211 — Adv. Composition with Modes of Literature (3) or	
Engl. 213 — Adv. Exposition (3)	6
 - Recommended Courses:

Engl. 213 — Advanced Exposition	3
Phil. 201 — Intro. to Philosophy	3
Sp.C. 111 — Fund. of Oral Communication (3) or	
Sp.C. 241 — Public Speaking I (3) or	
Sp.C. 211 — Voice and Diction (2)	2 or 3

3. Social Sciences (Anthropology, Economics, Geography, History
H.E. 236, Political Science, Psychology, Sociology) (24)
 - a. Required Courses:
 - Hist. 101-102 — Western Civilization 6
 - or
 - Hist. 131-132 — History of the U.S. 6
 - P.S. 101-102 — Introduction to American Government
and Political Science 6
 - Psy. 101 — Introduction to Psychology 3
 - Psy. 246 — Adolescence 3
 - b. Recommended Courses:
 - Anth. 101 — The Study of Man 3
 - Anth. 342 — Anthropology of the Natives of Alaska 3
 - Econ. 121-122 — Principles of Economics 6
 - Hist. 341 — History of Alaska 3
 - Soc. 101-102 — Introduction to Sociology 6
4. Mathematics and Natural Sciences (Anth. 401, Biological
Sciences, Chemistry, Geog. 105-401, 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 404 or 405 or 406 or 407 or 408 — Methods 3
 - *Ed. 452 — Student Teaching 6
 - *Candidates who have taught successfully two 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 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. 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 at least 26 approved credits and a teaching
minor of at least 16 approved credits for a total of 51 credits of which at
least 18 must be upper division. See advisor.
 - Option B.
Complete an integrated teaching major-minor of 51 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 Sciences
 Earth Sciences

7. Forty-eight credits of upper division courses, 24 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 procedures for admission to the Teacher Education Program. It is essential that the student have the necessary prerequisites and admission to the Teacher Education Program for placement in student teaching in the public schools. The following courses should be taken at the indicated times:

	FALL SEMESTER	SPRING SEMESTER
Sophomore	Psy. 101	*Psy. 246
Junior	*Ed. 313	*Ed. 332
Senior	*Ed. 421	*Ed. 452
	*Ed. 402, 404 405, 406, 407, or 408	

*Students must maintain a 2.00 average in these courses.

*Approved for history major only.

**Confer with head of the Department of 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.

REQUIREMENTS FOR ADMISSION TO STUDENT TEACHING

1. Elementary School — kindergarten through eighth grade:
 - a. Acceptance to the Teacher Education Program.
 - 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. 245, six hours in mathematics, 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. Acceptance to Teacher Education Program.
 - 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. 246, Ed. 313, and Ed. 332 with a minimum G.P.A. of 2.00 in Psy. 246, 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 the Teacher Education Program to enter student teaching.

REQUIREMENTS FOR M.Ed. DEGREE IN EDUCATION

A person must make application for admission to graduate study and may be required to 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.

ADMISSION REQUIREMENTS

1. The equivalent of an undergraduate major in education or a valid teaching certificate.
2. One year of satisfactory teaching experience or administrative experience in public schools.
3. Admission also may be contingent upon (1) satisfactory scores on various standardized tests (2) a satisfactory personal interview conducted by Department of Education faculty members.

MINIMUM DEGREE REQUIREMENTS:

1. Completion of a minimum of 36 credits in approved courses in a non-thesis program or 30 credits of approved courses in a thesis program.
2. Passing a comprehensive examination.
3. Completion of the general graduate degree requirements listed on page 18.

REQUIREMENTS FOR MASTER OF ARTS IN TEACHING

The Master of Arts in Teaching is designed to serve the following groups of students:

1. Baccalaureate graduates with a good general education and with majors or equivalent majors in subjects commonly taught in high school who wish to prepare for a career in secondary school classroom teaching.
2. Baccalaureate graduates with a good general education and with majors or equivalent majors in a basic academic discipline who wish to prepare for a career in elementary school classroom teaching.
3. Baccalaureate graduates who have or who can academically qualify for the Alaska secondary school certificate, who intend to make secondary school classroom teaching their career, and who wish to take additional work in their teaching major and/or minor as well as in education.

Interested persons in the first two categories should contact the head of the Education Department for additional information; interested persons in the third category should contact the head of the department of their teaching major.

REQUIREMENTS FOR EDUCATIONAL SPECIALIST DEGREE IN SCHOOL ADMINISTRATION

The Ed.S. degree is designed for teachers and other educators (1) who wish to undertake graduate study beyond the master's degree; (2) who wish to qualify for an intermediate degree between the master's and the doctorate; (3) who wish to develop further competence in one field of specialization, and (4) who wish to develop a background of knowledge in fields other than education.

ADMISSION REQUIREMENTS:

1. Applicants must be experienced educators who have successfully completed at least one year of elementary and/or secondary teaching.
2. All candidates should meet the University of Alaska Bachelor of Education degree requirements (or equivalent) for either elementary or secondary education majors with a minimum of 24 semester hours of education courses with an average G.P.A. of 3.00.

3. A master's degree preferred but not necessary.
4. Submission to the Director of Admissions:
 - a. A completed university application for admission to graduate study.
 - b. Official transcripts of all previous college or university work.
 - c. Three letters of reference, at least one from the most recent employer, testifying as to teaching or administrative ability.
5. Admission also will be contingent upon: (1) satisfactory scores on the aptitude section of the Graduate Record Examination and/or the Miller Analogies Test; and (2) a satisfactory personal interview conducted by Department of Education faculty members.

MINIMUM DEGREE REQUIREMENTS:

1. Completion of 60 semester hours beyond the bachelor's degree, including a minimum of 18 semester hours at the graduate level. At least 24 semester hours of work must be completed at the University of Alaska. The University may accept a maximum of 36 semester hours of transfer credit. Acceptance of transfer credits is contingent upon approval by the student's advisory committee and by the Dean of the College of Behavioral Sciences and Education.
2. Fulfillment of the requirements of the Ed.S. degree must be completed within seven years after admission to the program.
3. Satisfactory performance on a written and/or oral examination conducted by the Department of Education faculty and representatives from the student's academic discipline is required.

ELECTRICAL ENGINEERING

College of Mathematics, Physical Sciences and Engineering

Degrees — Bachelor of Science (Engineering Science), Master of Science, Master of Electrical Engineering

Minimum Requirements for Degrees: B.S. — 130 Credits; M.S. — 30 Additional Credits; M.E.E. — 162 Credits.

Modern Electrical Engineering is a diverse and changing field. Quantum Electronics, bio-electrical engineering, and optimal control theory are just a few samples of disciplines which were (only a few years ago) the exclusive domain of physicists, medical researchers, and mathematicians, but which are now basic research areas for electrical engineers.

The undergraduate program provides a sound, general foundation, both physically and mathematically, so that graduating engineers have access to not just traditional applied fields of electrical engineering, but to the more modern, "exotic" areas of electrical engineering as well.

Seniors are expected to take the student engineer-in-training examination.

Graduate students may elect to follow either the M.S.E.E. or the M.E.E. curriculum. The former is better suited to those who favor specialization or further graduate study; the latter is appropriate to engineers whose goal is broad professional practice.

REQUIREMENTS AND SUGGESTED CURRICULUM FOR B.S.E.S. DEGREE (ELECTRICAL)

FALL SEMESTER

FIRST YEAR	16 to 17½ Credits
Engl. 111 — Meth. of Written Communication	3
Math. 200 — Calculus	4
E.E. 102 — Intro. to Elec. Engr.	2
E.S. 111 — Engrg. Science	3
P.E. or Mil. Sci.	1 or 1½
*Elective	3 to 4

SECOND YEAR	15 or 16½ Credits
Math. 202 — Calculus	4
Phys. 211 — Gen. Physics	4
E.E. 203 — Fund. of Elect. Engr.	3
P.E. or Mil. Sci.	1 or 1½
*Electives	3 or 4

THIRD YEAR	16 or 17 Credits
E.E. 333 — Physical Electronics	3
E.E. 353 — Circuit Theory	3
E.E. 323 — Elect. Engr. Lab. I	1
E.S. 331 — Mech. of Materials	3
*English Electives	3

FOURTH YEAR	16 or 17 Credits
E.E. 403 — Elect. Pwr. Engr. I	4
Phys. 331 — Elect. & Magnetism	3
Math. 405 — Applied Mathematics	3
*Electives	6 or 7

*Electives must have the approval of the department.

SPRING SEMESTER

SPRING SEMESTER	17 or 17½ Credits
Sp.C. 111 — Fund of Oral Communication	3
Math. 201 — Calculus	4
E.S. 122 — Engin. Design	3
P.E. or Mil. Sci.	1 or 1½
*Elective	6

	16 or 16½
Math. 406 — Applied Mathematics	3
Phys. 212 — Gen. Physics	4
E.E. 204 — Fund. of Elect. Engr.	4
E.S. 208 — Mechanics	4
P.E. or Mil. Sci.	1 or 1½

	16 or 17 Credits
Math 314 — Linear Algebra	3
E.E. 334 — Elec. Circuits	3
E.E. 324 — Elect. Engr. Lab. II	1
E.E. 354 — Circuit Theory II	3
Chem. or Biol.	4
Engl. 211 or 213	3

	12 to 17 Credits
E.S. 346 — Basic Thermodynamics	3
E.S. 450 — Engr. Manag. & Op.	3
Math. 406 — Applied Math	3
*Electives	3 to 8

REQUIREMENTS FOR THE MASTER OF ELECTRICAL ENGINEERING

Students selecting the Master of Electrical Engineering program will meet the general requirements of the University for the master's degree, be guided in course work and an engineering project by a personal advisor, and accumulate a total of 32 semester hours of approved courses.

REQUIREMENTS FOR THE MASTER OF SCIENCE DEGREE IN ELECTRICAL ENGINEERING

A candidate for the Master of Science degree will meet the University's general requirements plus the following:

Thirty semester hours of credit approved by his graduate committee, of which six to twelve semester hours will be E.E. 697, 698 — Thesis.

ELECTRONICS TECHNOLOGY PROGRAM

College of Mathematics, Physical Sciences and Engineering

Degrees — Associate in Electronics Technology with Specialties in
Electronics or Electro-Mechanics.

Minimum Requirements for Degree: A.E.T. — 65 Credits.

The program in electronics technology prepares people to maintain, install, and operate electronic and mechanical equipment.

For students selecting electronics technology as their area of study, emphasis will be placed on equipment such as digital computers, telemetry systems, airways control equipment, carrier telephone systems, and broadcast transmitters.

For students selecting electro-mechanics as their area of study, emphasis will be placed on precision and high speed electro-mechanical devices and systems, such as high speed printers, office machines, servo systems, fluid power systems, industrial control systems, etc.

The program is not introductory electrical or mechanical engineering, which emphasizes design; it is electronics technology, which emphasizes maintenance.

REQUIREMENTS AND CURRICULUM FOR AN ASSOCIATE DEGREE IN ELECTRONICS TECHNOLOGY

FIRST YEAR FOR ELECTRONICS TECHNOLOGY OR ELECTRO-MECHANICS TECHNOLOGY

FALL AND SPRING SEMESTERS 16 Credits	SPRING AND SUMMER SEMESTERS 17 Credits
E.T. 51 — DC Circuits4	E.T. 61 — Tubes and Semiconductors4
E.T. 52 — AC Circuits4	E.T. 62 — Electronics Circuits I3
E.T. 55 — Electronics Practice3	E.T. 63 — Electronic Systems I4
E.T. 59 — Math. for Electronics5	E.T. 66 — Electronic Practice II3
	Engl. 67 — Elementary Exposition3

SECOND YEAR FOR ELECTRONICS TECHNOLOGY

SUMMER AND FALL SEMESTERS 17 Credits	FALL AND SPRING SEMESTERS 15 Credits
E.T. 71 — Electronic Circuits II4	E.T. 81 — Telemetry4
E.T. 72 — Electronic Circuits III3	E.T. 84 — Digital Computer Theory and Application5
E.T. 73 — Microwave Electronics3	B.A. 165 — B.A. for Tech.3
E.T. 76 — Logic and Gate Circuits3	Social Science Elective3
E.T. 78 — Solid State Electronics4	

SECOND YEAR FOR ELECTRO-MECHANICS TECHNOLOGY

Summer and Fall Semesters	17 Credits	Fall and Spring Semesters	14 Credits
E-M.T. 73 — Mechanics I	5	E-M.T. 85 — Mechanics II	5
E-M.T. 74 — Storage Principles	4	E-M.T. 86 — Vacuum Technique Proc.	3
E-M.T. 76 — E-M Ind. Control Dev.	4	B.A. 165 — B.A. for Tech.	3
E-M.T. 79 — Fluid Power Systems	4	Social Science Elective	3

ENGINEERING MANAGEMENT

College of Mathematics, Physical Sciences and Engineering

Degree — Master of Science

Minimum Requirements for Degree: 30 Credits (Beyond a Bachelor's Degree in Engineering or a Related Field)

The engineering management curriculum is designed for graduate engineers who will hold executive or managerial positions in engineering, construction, industrial or governmental organizations. It includes human relations, financial, economic, quantitative, technical and legal subjects useful in solving problems of management.

The curriculum includes graduate level core courses in the subjects named above, plus additional course work either directed toward special problems such as arctic engineering, or in one of the more general fields of engineering through projects or research in the application of engineering management principles. In addition to an engineering degree, a candidate should have had on-the-job experience in the practice of engineering.

FALL SEMESTER	15 Credits	SPRING SEMESTER	15 Credits
EM 605 — Advanced Engineering Economy	3	EM 612 — Engineering Management	3
EM 611 — Engineering Management	3	EM 613 — Engineering Management	3
EM 631 — Engineering Law	3	*EM 621 — Operations Research	3
*EM 623 — Computer Programming for Engineering Managers	3	EM 694 — Project	3
**Elective	3	**Elective	3

*Students must complete either EM 621 — Operations Research or EM 623 — Computer Programming

**Electives must have the approval of the department.

Substitutions for one or more of the courses listed above are permitted if similar courses are included in the students' previous academic background.

ENGLISH**College of Arts and Letters**

Degrees — Bachelor of Arts, Master of Arts, Master of Fine Arts, Master of Arts in Teaching

Minimum Requirements for Degrees: B.A. — 130 Credits; M.A. — 30 Additional Credits; M.F.A. — 45 Additional Credits; M.A.T. — 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 the general requirements for a B.A. degree as listed on page 16.
2. Complete 33 credits in English besides Engl. 111 and Engl. 211 or 213, including:

Engl. 201-202 — Masterpieces of World Literature	6
Engl. 423 — Elizabethan and Jacobean Drama	3
or	
Engl. 424 — Shakespeare	3
Two courses (six credits) chosen from:	
Engl. 421 — Chaucer	3
Engl. 426 — Milton	3
Engl. 472 — History of the English Language	3

A MINOR IN ENGLISH REQUIRES 18 CREDITS BESIDES ENGL. 111 AND ENGL. 211 or 213, INCLUDING:

- | | |
|--|---|
| Engl. 201-202 — Masterpieces of World Literature | 6 |
| Engl. 423 — Elizabethan and Jacobean Drama | 3 |
| or | |
| Engl. 424 — Shakespeare | 3 |
| One course (three credits) chosen from: | |
| Engl. 421 — Chaucer | 3 |
| Engl. 426 — Milton | 3 |
| Engl. 472 — History of the English Language | 3 |

REQUIREMENTS FOR M.A. DEGREE IN ENGLISH

1. A minimum of 30 credits of approved courses including Engl. 697-698, Thesis, six credits.
2. Completion of the general graduate degree requirements listed on page 18.
3. Reading knowledge of a foreign language.
4. Thesis 6

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

1. Creative writing courses (12 credits):
 - English 683 — Directed Reading 3
 - English 675, 681, 685 — Writing Drama, Fiction and Verse 9
 - (No more than six credits may be taken in any one course.)
2. Required English courses and electives (15 credits):
 - English 600 — Introduction to Graduate Studies in English 3
 - Graduate English Electives 12
3. Required craft courses and interdisciplinary electives (12 credits):
 - English 381, 382, 383 — Craft of Poetry, Fiction and Drama 6
 - (No more than three hours may be taken in any one course.)
 - Interdisciplinary electives 6
 - (To be approved by advisor; no two courses in same field without advisor's consent.)

NOTE: If any or all of this requirement has been met at the undergraduate level, the credits may be made up of graduate English electives or interdisciplinary electives.
4. English 697, 698 — Thesis 6
5. Reading knowledge of a foreign language. 6
- Total 45

REQUIREMENTS FOR M.A.T. DEGREE IN ENGLISH

This degree is designed to serve baccalaureate graduates who have qualified or who can qualify for the Alaska secondary school certificate; who intend to make secondary school classroom teaching their career; and who wish to take additional work in their teaching major as well as in education. A minimum of 30 hours is required. An advisory committee, appointed by the head of the department, will require a minimum of 15 hours (nine of them on the graduate level) of English courses taken at the University of Alaska.

ENVIRONMENTAL HEALTH ENGINEERING PROGRAM

College of Mathematics, Physical Sciences and Engineering

Degree — Master of Science

Minimum Requirements for Degree: 30 Credits (Beyond a Bachelor's Degree)

The environmental health engineering curriculum is designed for graduate engineers, chemists, and biologists who will pursue a career in the areas of water supply, treatment, and distribution; waste treatment, stream pollution, air pollution, and solid wastes disposal. Graduates will hold positions in federal, state, and municipal organizations as well as consulting engineering offices.

REQUIREMENTS FOR M.S. DEGREE IN ENVIRONMENTAL HEALTH ENGINEERING

1. A minimum of 30 credits of approved and required courses, including a six-credit thesis.
2. Completion of the general requirements for a graduate degree listed on page 18.
3. The following required courses:

FALL SEMESTER	15 Credits
E.H.E. 605 — Water Treatment	3
E.H.E. 606 — Waste Treatment	3
Biol. 341 — Microbiology	4
*Electives and Research	5

SPRING SEMESTER	15 Credits
E.H.E. 601 — Water Quality Control	2
E.H.E. 608 — E.H.E. Unit Processes	2
E.H.E. 610 — Arctic E.H.E. Design	2
*Electives and Research	9

*Electives must have the approval of the department.

FIRE SCIENCE

Anchorage Community College

Degree — Associate of Arts

Minimum Requirements for Degree: A.F.S. — 64 Credits.

REQUIREMENTS FOR AN ASSOCIATE OF ARTS IN FIRE SCIENCE

I. General Education Requirements:

A. Specific Requirements	(14)
English 67-68 or English 111, 211 or 213	6
Political Science 101-102	6
Sp.C. 51 or Sp.C. 111	2 or 3
B. General Requirements	(20)
Natural Science	(8)
Chemistry 103-104	8
Mathematics (6) from the following:	
Math. 105, Math. 107, Math. 110	6
Social Science	(6)
P.S. 211 and Psy. 101	6
Free Electives	6

II. Major	(24)
A. Specific Requirements	(18)
F.S. 111 — Intro. to Fire Admin	3
F.S. 121 — Fire Suppression Systems	3
F.S. 131 — Construction Codes, Designs, Materials	3
F.S. 211 — Chemistry of Flammable Materials	3
F.S. 212 — Industrial, Radiation, Chem. Hazards	3
F.S. 222 — Hydraulics and Water Supply Systems	3
B. Major Electives (6) from the following:	(6)
F.S. 101 — Field Observation	3
F.S. 201 — Field Practice	3
F.S. 241 — Insurance Grading and Rating Schedules	3
F.S. 151 — Fire Protection Law	3
F.S. 155 — Fire Investigation	3
P.S. 259 — Administrative Concepts	3

FISHERIES BIOLOGY

Department of Wildlife Management, College of Biological Sciences and Renewable Resources

Degrees — Bachelor of Science, Master of Science

Minimum Requirements for Degrees: B.S. — 135 Credits; M.S. — 30 Additional Credits.

The fisheries biology curriculum in the undergraduate program in the Department of Wildlife Management is intended to provide 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 fisheries work. Students contemplating careers in research, administration, advanced management, or teaching will find the bachelor's curriculum a solid foundation for graduate study.

The geographic location of the University is advantageous for the study of Interior Alaska aquatic habitats. A number of sub-arctic streams and lakes are within easy reach. Access to the marine environment is being obtained through the National Sea Grant Program in Prince William Sound.

Adequate study collections of fishes are available, and the invertebrate collection is being rapidly expanded. Undergraduates have an opportunity for association with personnel of federal and state conservation agencies and these agencies hire a number of students for summer field work.

Fisheries play 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. Under the college's National Sea Grant Program, the fisheries curriculum is being expanded to produce graduates prepared to play an important role in research, development, and conservation of Alaska's aquatic resources.

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

FALL SEMESTER

FIRST YEAR	16 or 16½ Credits
Biol. 105 — Fund. of Biology	4
Chem. 105 — General Chem.	4
Engl. 111 — Written Communication	3
**Mathematics	4
P.E. or Mil. Sci.	1 or 1½

SECOND YEAR	16 or 16½ Credits
Biol. 217 — Comp. Anatomy of Vertebrates	4
Biol. 303 — Ecology	3
Chem. 223 — Intro. Organic Chem.	4
or	
Phys. 103 — College Physics	4
P.E. 100 or Mil. Sci.	1 or 1½

THIRD YEAR	17 Credits
Biol. 203 — Invertebrate Zoology	4
Biol. 309 — Biol. of the Vert.	4
Engl. 211 or 213 — Adv. Comp.	3
***Foreign Language	3
W.M. 301 — Pop. Dynamics and Management	3

FOURTH YEAR	11+ Credits***
Econ. 121 — Principles of Econ.	3
W.M. 333 — Lit. Ecology	1
Geol. 411 — Gen. Oceanography	3
or	
W.M. 423 — Limnology	3
W.M. 429 — Gen. Fisheries Biol.	3
W.M. 491 — Seminar	1
or	
W.M. 493 — Special Topics	1

SPRING SEMESTER

	16 or 16½ Credits
*Biol. 210 — General Physiology	4
Chem. 106 — General Chem.	4
Soc. Sci. Elective	3
**Mathematics	4
P.E. 100 or Mil. Sci.	1 or 1½

	15 or 15½ Credits
Biol. 239 — Plant Form & Function	4
Land Res. 101 — Cons. Natural Res.	3
Applied Stat. 301 — Elem. Statistics	3
Phys. 104 — College Physics	4
P.E. 101 or Mil. Sci.	1 or 1½

	12+ Credits****
Biol. 302 — Genetics	3
***Foreign Language	3
Applied Stat. 402 — Scientific Sampling	3
Engl. Elective	3

	10+ Credits****
Biol. 414 — Comp. Physiology	4
Engl. 314 — Research Writing	3
W.M. 430 — Fisheries & Their Management	3

*Note prerequisite

**A year's sequence of mathematics including Math. 200 will be worked out with the student's advisor.

***One year of foreign language taken at the university level. Students having three or four years of a language in high school with a grade of "C" or better, may, with advisor's approval, substitute an equivalent number of credits in the humanities area.

****Sufficient elective credits to satisfy the minimum requirement of 135 credits are needed; six of these must be from courses which will satisfy the university's social science requirement. All electives must be approved by the head of the 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 type-written 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.

The department offers a limited number of research assistantships under the National Sea Grant program involving mainly marine fisheries investigations in Prince William Sound. At times, funds become available from the Alaska Department of Fish and Game, the National Marine Fisheries Service and the Fish and Wildlife Service for special projects.

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

1. A minimum of 30 credits of approved courses, including W.M. 697-698, Thesis, in the field of fisheries biology.
2. Complete general requirements for a graduate degree as listed on page 18.
3. Students working in subject areas involving significant non-English literature may be expected to read the appropriate foreign language.

GRADUATE STUDY IN FISHERIES BIOLOGY

The Department of Wildlife Management offers graduate work leading to the Master of Science degree in Fisheries Biology. In exceptional cases an inter-disciplinary Doctor of Philosophy degree can also be offered. Persons desiring detailed information on the graduate program in fisheries 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 Admission to Graduate Study in this catalog.

FISHERIES TECHNOLOGY

College of Biological Sciences and Renewable Resources

The Board of Regents has approved the offering of an associate degree program in fisheries technology. This two year program is in the process of development. It will have three majors: fishing, processing, biology. It is expected that the program will be implemented during the 1971-1972 school year. For more information, contact the coastal community college directors or the Vice President for Public Service.

GENERAL SCIENCE

College of Mathematics, Physical Sciences and Engineering

Degrees — Bachelor of Science, Master of Science

Minimum Requirements for Degrees: B.S. — 130 Credits; M.S. — 30 Additional Credits; M.A.T. — 30 Additional Credits.

Man's insatiable curiosity and his desire to understand the world about him have led 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 degrees.

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

FALL SEMESTER

FIRST YEAR 17 or 17½ Credits

Engl. 111 — Methods of Written Communication	3
Biol. 105 — Fund. of Biology	4
Math. 106 — Algebra & Trig	5
Chem. 105 — General Chemistry	4
or	
Phys. 103 — College Physics	4
P.E. or Mil. Sci.	1 or 1½

SECOND YEAR 17 or 18½ Credits

Phys. 103 — College Physics	3
or	
Chem. 105 — General Chemistry	4
Econ. 121 — Prin. of Econ.	3
Geol. 101 — General Geology	4
For. Lang. or Dept. Elect.	6 or 5
P.E. or Mil. Sci.	1 or 1½

SPRING SEMESTER

16 or 16½ Credits

Sp.C. 111 — Fund. of Oral Communications	3
Biol. 106 — Fund. of Biol.	4
Math. 200 — Calculus	4
Chem. 106 — General Chemistry	4
or	
Phys. 104 — College Physics	4
P.E. or Mil. Sci.	1 or 1½
Electives	4

17 or 18½ Credits

Phys. 104 — College Physics	4
or	
Chem. 106 — General Chemistry	4
Anth. 101 — The Study of Man	3
For. Lang. or Dept. Elect.	7 or 6
P.E. or Mil. Sci.	1 or 1½
Elective	3

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. Elective or Foreign Language	5
Engl. 213 — Adv. Exposition	3
Social Science Elective	3
Dept. Elec. or Foreign Language	6
Engl. 314 — Scholarly and Tech. Writing or selected lit.	3

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 M.S. DEGREE IN GENERAL SCIENCE

1. Minimum of 30 credits of approved courses.
2. Completion of the general graduate degree requirements listed on page 18.

The Departments of Mathematics, Physics, Chemistry, Biological Sciences, and Geology offer work toward the Master of Science degree 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.

REQUIREMENTS FOR M.A.T. DEGREE

Persons interested in this degree program should see the head of the department.

GEOGRAPHY DEPARTMENT**College of Earth Sciences and Mineral Industry**

Degrees — Bachelor of Arts, Bachelor of Science; Master of Arts or Master of Science in Regional Development.

Minimum Requirement for Degrees: B.A. — 130 Credits; B.S. — 130 Credits; M.A. — 30 Additional Credits; M.S. — 30 Additional Credits.

The department offers undergraduate courses and degrees in geography, and participates in the graduate interdisciplinary program in Regional Development. Geography provides an organized picture of the earth as a whole and of its interrelated regions and activities. It deals both with the natural resources of the earth and with man's use of them. Its methodology includes the observation, measurement, description, and analysis of places or areas — their likeness, differences, interdependence and significance. Geography draws upon many related disciplines for needed information; in return it serves by presenting comprehensive, integrated descriptions and interpretations of the total characteristics of areas, economic units or political entities. It thus serves as a bridge between the physical sciences and the social sciences. At the University of Alaska geography is offered as (a) part of a broad cultural background in a liberal arts curriculum; (b) as part of a comprehensive program in biological and earth sciences; (c) as background for studies in economics, history, political science and other social sciences; (d) as preparation for teaching geography, earth science or social science in elementary or secondary schools; (e) as technical training for professional geographic work in government, business or industry; (f) as preparation for further graduate study in geography, regional planning and related disciplines. Students majoring in geography, after completing required fundamental courses, may elect such advanced work in this and other departments as will provide a concentration either in physical science or in social science.

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

1. Complete general requirements for a B.A. degree, including minors as listed on page 16, and including the equivalent of two years of collegiate work in one foreign language. Meet all the following additional requirements:
2. Complete 24 credits in Geography, including the following: Geog. 101 or 103; 105; 202 or 302, 209 or 401; 305 or 311; 306 or 327; 491; geography elective.
3. Complete 20 credits of the following, or approved alternative courses, with grouping to emphasize cultural, economic, physical or regional geography: (Can also be used to meet basic degree requirements and to apply toward minor requirements.)
 - Anthropology 203, 204.
 - Biology 105, 303.
 - Business Administration 292 or 648.
 - Economics 232, 435.
 - Geology 101 or 111, 102, 304, 408, 462.
 - History 225, 254.
 - Land Resources 101, 311, 451.
 - Oceanography 411.
 - Political Science 321 or 322.
 - Sociology 207, 406.

4. Approved electives to complete 130 credits.

REQUIREMENTS FOR B.S. DEGREE WITH MAJOR IN GEOGRAPHY.

1. Complete the general requirements for a B.S. degree, excluding foreign languages, but including 12 credits of approved courses in mathematics and including two minors.
2. Satisfy requirements 2, 3, and 4 as stated above for the B.A. degree, with emphasis in either economic or physical geography.

REQUIREMENTS FOR M.A. OR M.S. DEGREE IN REGIONAL DEVELOPMENT.

Persons interested in these interdisciplinary degree programs should consult with the head of the department in which concentration is planned and with the head of the Geography Department who administers this program for the University.

GEOLOGICAL ENGINEERING

Department of Geology, College of Earth Sciences and Mineral Industry

Degree — Bachelor of Science

Minimum Requirements for Degree — 135 Credits plus 6 Credits Summer Field Course

The geological engineering curriculum is designed to prepare the student for professional work in the earth sciences, involving engineering problems.

REQUIREMENTS AND CURRICULUM FOR B.S. DEGREE IN GEOLOGICAL ENGINEERING

FALL SEMESTER

FIRST YEAR

17 or 17½ Credits

Engl. 111 — Meth. of Written Comm.	3
Math. 200 — Calculus	4
Chem. 105 — 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. 202 — Calculus	4
Phys. 211 — General Physics	4
Geol. 111 — Physical Geology	4
*Professional Elective	3
P.E. or Mil. Sci.	1 or 1½

SPRING SEMESTER

17 or 17½ Credits

Sp.C. 111 — Fund. of Oral Comm.	3
Math. 201 — Calculus	4
Chem. 102 — General Chemistry	4
E.S. 102 — Graphics	2
Econ. 121 — Prin. of Econ.	3
P.E. or Mil. Sci.	1 or 1½

18 or 18½ Credits

A.S. 301 — Elem. of Prob. & Statistics	3
or	
Math. 302 — Diff. Equations	3
Phys. 212 — General Physics	4
E.S. 208 — Mechanics	4
Geol. 314 — Structural Geology	3
Geol. 418 — Intro. to Geophysics	3
P.E. or Mil. Sci.	1 or 1½

FALL SEMESTER**THIRD YEAR****18 Credits**

E.S. 331 — Mech. of Materials	3
Geol. 213 — Mineralogy	4
Chem. 331 — Physical Chemistry	3
E.S. 341 — Fluid Mechanics	4
Professional Elective	4

SUMMER

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

FOURTH YEAR**17 Credits**

GEOL. 315 — Petrology	5
Min. 405 — Geophys. & Geochem. Exp	3
C.E. 435 — Soil Mechanics	3
Professional Elective*	3
Social Science Elective	3

SPRING SEMESTER**18 Credits**

Geol. 214 — Optical Mineralogy	3
Min. 102 — Min. Syst. Engr.	4
Geol. 362 — Engr. Geology	3
Engl. 211 — Adv. Comp./Modes of Lit.	3
or	
Engl. 213 — Adv. Exposition	3
Professional Elective	3
Geol. 350 — Geol. Field Method	2
Min. 202 — Mine Surveying	3

16 Credits

Geol. 404 — Economic Geology	3
English Elective	3
Professional Electives*	7
Social Science Elective	3

*Approved courses in geology, mathematics, chemistry, physics or the engineering sciences.

GEOLOGY**College of Earth Sciences and Mineral Industry**

Degrees — Bachelor of Arts, Bachelor of Science, Master of Science, Master of Arts in Teaching, Doctor of Philosophy.

Minimum Requirements for Degrees: B.A. Geology Major — 130 Credits; B.S. Geology — 130 Credits, plus 6 Credits Summer Field Course; M.S. Geology — 30 Additional Credits, Including Thesis; M.A.T. — 30 Additional Credits; PH.D. (Open)

The bachelor degrees curricula in geology provides broad training in the earth sciences and essential course work in mathematics and the physical sciences. Graduate programs are tailored to the special research and study interest of the student. In addition to courses listed under the Geology Department, students should check the courses in geophysics, listed under the Physics Department, and those in oceanography and marine geology, listed under Oceanography and Ocean Engineering (OCN).

REQUIREMENTS AND CURRICULUM FOR B.S. DEGREE IN GEOLOGY

FALL SEMESTER

FIRST YEAR	16 or 16½ Credits
Engl. 111 — Meth. of Written Comm	3
Math. 200 — Calculus	4
Geol. 111 — Physical Geology	4
Chem. 105 — General Chemistry	4
P.E. or Mil. Sci.	1 or 1½

SECOND YEAR

Geol. 213 — Mineralogy	4
Math. 202 — Calculus	4
Phys. 211 — General Physics	4
P.E. or Mil. Sci.	1 or 1½
Social Science Elective	3

THIRD YEAR

Geol. 304 — Geomorphology	3
Geol. 315 — Petrology	5
Geol. 401 — Invertebrate Paleo	4
Foreign Language	5

SUMMER

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

FOURTH YEAR

Geol. 321 — Sedimentation	3
Geol. 416 — Intro. to Geochemistry*	3
Social Science Elective	3
Professional Electives**	6

SPRING SEMESTER

	16 or 16½ Credits
Sp.C. 111 — Fund. of Oral Comm.	3
Math. 201 — Calculus	4
Geol. 102 — Historical Geology	4
Chem. 106 — General Chemistry	4
P.E. or Mil. Sci.	1 or 1½

17 or 17½ Credits

Geol. 214 — Optical Mineralogy	3
A.S. 301 — Elem. Probab. & Statistics	3
or	
Math. 302 — Diff. Equations	3
Phys. 212 — General Physics	4
P.E. or Mil. Sci.	1 or 1½
English 211 or 213	3
Elective	3

16 Credits

Geol. 314 — Structural Geology	3
Geol. 402 — Strat. Paleo	3
Foreign Language	5
Min. 202 — Mine Surveying	3
Geol. 350 — Geol. Field Meth.	2

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 concerned.

REQUIREMENTS FOR B.A. DEGREE WITH A GEOLOGY MAJOR

1. Complete the general requirements for a B.A. degree listed on page 16.
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 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 18.

REQUIREMENTS FOR PH.D.

1. Program arranged by conference.
2. Completion of the general requirements for the Ph.D. listed on page 20.

*Majors may elect to substitute Chem. 331 for Geol. 416.

**Approved courses in geology, mathematics, chemistry, physics, or the engineering sciences.

Suggested professional electives:

A.S. 301 — Elementary Probability & Stats.
 Chem. 331, 332 — Physical Chemistry
 Chem. 333, 334 — Physical Chemistry Lab
 C.E. 344 — Hydrology
 C.E. 412 — Elements of Photogrammetry
 C.E. 422 — Foundation Engineering
 C.E. 435 — Soil Mechanics
 C.E. 603 — Arctic Engineering
 E.S. 201 — Computer Techniques
 Math. 204 — Elementary Probability & Stats.
 Math. 302 — Differential Equations
 Math. 309 — Programming of Digital Computers

Math. 312 — Numerical Methods for Engineers
 Math. 405, 406 — Applied Mathematics
 M.P.R. 313 — Intro. to Mineral Preparation
 M.P.R. 418 — Emission, Spectroscopy, X-Ray diffraction, atomic absorption and electron microscopy
 Min. 408 — Mineral Valuation and Economics
 Phys. 311, 312 — Classical Physics
 Phys. 351 — Intro. to Dynamic Meteorology
 Phys. 465 — Meteorology

(See other listings under OCN and Phys.)

HEALTH, PHYSICAL EDUCATION, AND RECREATION

College of Behavioral Sciences and Education

Degrees — Bachelor of Arts, Bachelor of Science

Minimum Requirements for Degrees: 130 Credits

The curriculum in physical education serves three purposes: (1) to provide students with an interest-area major, (2) to prepare qualified students to teach physical education, coach athletic teams, and direct recreational programs according to the needs of the State of Alaska, and (3) to prepare students for future enrollment in graduate physical education programs in Alaska or other

states. Those students who do wish to teach physical education in the State of Alaska must satisfy the requirements for an Alaska teaching certificate by taking appropriate courses in the Department of Education.

REQUIREMENTS FOR B.A. OR B.S. DEGREE WITH A PHYSICAL EDUCATION MAJOR

1. Complete general requirements for a B.A. or B.S. degree as listed on page 16. The following courses are required of Physical Education majors: Biology 105-201-210, Chemistry 104, 105 or equivalent.
2. Complete the following professional courses:

Required Courses (16 credits):

P.E. 201 — Introduction to Health, Physical Education, and Recreation	2
P.E. 311 — Principles of Physical Education	3
P.E./Ed. 308 — Physical Education for the Elementary School	3
P.E. 358 — History of Physical Education	3
P.E. 425 — Organization and Administration of Physical Education	3
P.E. 246 — First Aid	
or	
P.E. 440 — Prevention and Care of Athletic Injuries	2
P.E./Ed. 406 — Methods of Teaching Physical Education (counts as Education credit)(3)	

Six Credits from the following courses:

P.E. 203 — Fundamentals of Sports — Tennis and Badminton	1
P.E. 205 — Fundamentals of Sports — Wrestling (Men)	1
P.E. 211 — Fundamentals of Sports — Soccer and Volleyball	1
P.E. 213 — Fundamentals of Sports — Swimming	1
P.E. 214 — Fundamentals of Sports — Skiing	1
P.E. 215 — Fundamentals of Sports — Tumbling and Gymnastics	1
P.E. 216 — Fundamentals of Sports — Rhythms	1

Ten Credits from the following courses:

P.E. 301 — Techniques in Physical Education — Basketball (Men)	2
P.E. 302 — Techniques in Physical Education — Track and Field	2
P.E. 303 — Techniques in Physical Education — Team Sports (Women)	2
P.E. 304 — Techniques in Physical Education — Winter Sports	2
P.E. 331 — Sports Officiating	2
P.E. 332 — Intramural Sports	2
P.E. 400 — Techniques in Physical Education — Tumbling and Gymnastics	2
P.E. 408 — Techniques in Physical Education — Aquatics	2
P.E. 410 — Techniques in Physical Education — Rhythms	2

Four Credits from the following courses:

P.E. 242 — Personal and Community Health	3
P.E. 246 or 440 (see required courses)	2
P.E. 321 — Practicum in Physical Education (maximum 4 credits)	1
P.E. 421 — Physiology of Exercise	3
P.E. 432 — Bio-mechanics of Exercise and Sports	3
P.E. 493 — Special Topics	Credits Arranged
P.E. 494 — Special Topics	Credits Arranged

3. Minors (will depend upon minor chosen).
4. Electives to total 130 credits.

FOR MINOR IN PHYSICAL EDUCATION IN ONE OF THE FOLLOWING DEGREE PROGRAMS, CONSULT WITH PHYSICAL EDUCATION DEPARTMENT HEAD:

1. B.A. or B.S. Degree — 18 credits.
2. B.Ed. Degree, Secondary Education — 18 credits.

HEALTH SCIENCES, PRE-PROFESSIONAL CURRICULA

Professional schools of medicine and dentistry as well as many of the professional schools in para-medical fields (e.g., nursing, physical therapy) require one to three or four years of collegiate work before a student will be admitted. These years of preliminary academic work may be taken at the University of Alaska, where the student follows a sequence of courses planned to meet the requirements of the particular professional field in which he is interested. Students interested in health professions should contact the Health Sciences Pre-professional Advisor, College of Biological Sciences and Renewable Resources, before registering.

Most pre-medical students plan on four preliminary years. The student is encouraged to develop his major area of interest, be it in natural or social sciences or in the humanities, but in preparation for medical school he must gain a thorough understanding of the modern concepts in biology, chemistry, and physics. He is encouraged to include chemistry and physics or biology in his freshman course of study. Usually, students at the University of Alaska follow a curriculum leading to a Bachelor of Arts degree with a major in biological sciences 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 3.00 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.

Commencing September, 1971, the University of Alaska, in collaboration with the University of Washington School of Medicine, is beginning a program (WAMI) especially designed to integrate pre-medical and medical training and to integrate medical training with practice in Alaska. The program may shorten the total time students spend in medical training and will provide some special training opportunities in community practice. Students desiring more information about this program should write to the Dean, College of Biological Sciences and Renewable Resources.

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 a bachelor's degree 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 interested in an associate degree in nursing should write to the Director, University of Alaska, Anchorage Community College.

HISTORY**College of Business, Economics and Government**

Degrees — Bachelor of Arts, Master of Arts, Master of Arts in Teaching

Minimum Requirements for Degrees: B.A. — 130 Credits; M.A. — 30 Additional Credits; M.A.T. — 30 Additional 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 other social sciences.

REQUIREMENTS FOR B.A. DEGREE WITH A HISTORY MAJOR

1. Complete general requirements for a B.A. degree listed on page 16.
2. Complete the following foundation courses:

Econ. 121 — Principles of Economics	3
Hist. 101-102 — Western Civilization	6
Hist. 131-132 — History of the U.S.	6
P.S. 101-102 — American Government and Political Science	6
3. Complete 20 credits in History, including:

Hist. 475 — Introduction to Historical Method	3
Approved Upper Division Amer. Hist. Electives	6
Approved Upper Division European Hist. Elect.	6

A MINOR IN HISTORY REQUIRES 12 CREDITS OF HISTORY ELECTIVES BEYOND HIST. 101 AND 102, SIX OF WHICH MUST BE UPPER DIVISION.

REQUIREMENTS FOR THE MASTER OF ARTS DEGREE IN HISTORY

1. Completion of the general requirements for a graduate degree as listed on page 18.
2. Completion of a minimum of 30 semester hours of courses in history and other fields as determined by the candidate's graduate committee. The courses must include Hist. 601, Historiography, Hist. 691, Seminar in European History, and Hist. 692, Seminar in American History.
3. Completion of a satisfactory thesis for which six credit hours may be granted.
4. Successful completion of comprehensive examinations in two fields of history as determined by the candidate's graduate committee.
5. Passage of an oral examination on the thesis and general field of history.

REQUIREMENTS FOR M.A.T. DEGREE

Refer to general requirements for M.A.T. degree on page 129. Persons interested in this degree program should check with the head of the department.

HOME ECONOMICS**College of Behavioral Sciences and Education****Degree — Bachelor of Science****Minimum Requirements for Degree: 130 Credits**

The home economics curriculum stresses the development of competencies necessary to a professional home economist with special emphasis on home economics education. In addition to providing a background for service in home economics careers, provision is made for the liberal education of the student as a person, a citizen, and a family member through the selection of courses in the social and natural sciences, the humanities, and the arts.

HOME ECONOMICS CURRICULUM**FALL SEMESTER****FIRST YEAR****15 Credits**

Engl. 111 — Meth. of Written Comm.	3
Biol. 105 — Fund. of Biology	4
Math. 106 or 121	4
H.E. 113 — Cloth. Const. & Sel. I	3
P.E. 100 — Physical Ed. Activities	1

SECOND YEAR**17 Credits**

Engl. 211 — Adv. Comp. with Modes of Lit. or	
Engl. 213 — Adv. Exposition	3
Chem. 103 — Cont. Chem. or Chem. 105 —	
Gen. Chem.	4
H.E. 231 — Interior Design	3
H.E. 241 — Home Management	3
Psy. 101 — Intro. to Psy.	3
P.E. 100 — Physical Ed. Activities	1

THIRD YEAR**17 Credits**

English Elective	3
H.E. 312 — Cloth. Const. & Sel. II	3
H.E. 304 — Nutrition	3
Econ. 121 — Prin. of Econ	3
*Electives	5

FOURTH YEAR**17 Credits**

H.E. 441 — Family Health	3
H.E. 401 — Consumer Education	3
*Electives	11

SPRING SEMESTER**15 Credits**

Sp.C. 111 — Fund. of Oral Comm.	3
Biol. Elective	4
Math. 122 or 200 or 204	4
H.E. 102 — Meal Management	3
P.E. 100 — Physical Ed. Activities	1

17 Credits

English Elective	3
Chem. 104 — Cont. Chem. or Che. 106 — Gen.	
Chem. & Intro. Qualitative Analysis ..	4
H.E. 211 — Textiles	3
H.E. 236 — Marriage & Fam. Life	3
Soc. 101 — Intro. to Soc.	3
P.E. 100 — Physical Ed. Activities	1

17 Credits

H.E. 245 — Child Development	3
H.E. 302 — Experimental Foods	3
*Electives	11

15 Credits

H.E. 442 — Household Equip.	3
*Electives	12

A MINOR IN HOME ECONOMICS REQUIRES COMPLETION OF THE FOLLOWING:

	Credits
H.E. 102 — Meal Management	3
H.E. 113 — Clothing Construction and Selection I	3
H.E. 236 — Marriage and Family Life	3
H.E. 241 — Home Management	3
H.E. 245 — Child Development	3

plus 3 hours from the following:

H.E. 304 — Nutrition	3
H.E. 401 — Consumer Education	3
H.E. 441 — Family Health	3
H.E. 442 — Household Equipment	3

Total Credits Required for a Minor 18

*All electives must be approved by the head of the department.

Teaching Certificates — Home economics graduates may qualify for teaching vocational home economics. They may obtain an Alaskan teaching certificate by completing Ed. 407, Methods of Teaching Home Economics, and meeting the other requirements of the State Department of Education.

INSTRUCTIONAL AIDES PROGRAM

Anchorage Community College

Degree — Associate of Arts

Minimum Requirements for Degree: A.I.A. — 61 Credits.

REQUIREMENTS FOR AN ASSOCIATE OF ARTS FOR INSTRUCTIONAL AIDES

- I. General Education
 - A. Specific Requirements (15)
 - English 6
 - Social Studies 6
 - Speech 3
 - B. General Requirements (18)
 - At least six credits each in three areas below:
 - Humanities 6
 - Social Science 6
 - Natural Science 6
 - Mathematics 6
 - Other 6
- II. Major for Instructional Aides
 - No course used to meet the General Education requirements may be used to meet the requirements of the major.

A.	Specific Requirements	(17)
	Education 201	3
	Education 111	3
	Education 205	4
	Education 206	4
	Art 204	3
B.	Electives from the following:	(11)
	Anthropology 202	3
	Psychology 223	3
	Sociology 106	3
	Sociology 201	3
	Behavioral Science 101	3
	Home Economics 113	3
	Music 123	3
	Physics 51 or 53	3

JOURNALISM

College of Arts and Letters

Degree — Bachelor of Arts

Minimum Requirements for Degree: 130 Credits

The journalism curriculum is designed to prepare students for a challenging profession which calls for a high degree of proficiency in communicating with words and pictures — while being versatile enough to allow a broad general education.

Students with diverse interests frequently find that journalism fits well into a joint educational program with many other fields.

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

1. Complete general requirements for a B.A. degree listed on page 16.
2. Complete a minimum of 21 hours of credit 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:

Jour. 201 — Introduction to Journalism	3
Jour. 203 — Basic Photography	3
Jour. 212 — Editing	3
Jour. 302 — Reporting of Public Affairs	3
Jour. 324 — Newspaper Production, Advertising and Typography	3
Jour. 206 — Advanced Reporting	3

THE ABOVE COURSES ALSO CONSTITUTE THE MINOR IN JOURNALISM

4. Complete six hours in the following courses:

Jour. 100 — Current Affairs	1
Jour. 303 — Advanced Photography	3
Jour. 311 — Magazine Article Writing	3
Jour. 320 — Journalism in Perspective	3
Jour. 403 — Cinematography	3
Jour. 411 — Advanced Magazine Article Writing	3
Jour. 412 — Advanced Editing	3
Jour. 413 — Law of the Press	3
Jour. 420 — Biography	3
Jour. 493-494 — Special Topics	3-6
5. Work at least two semesters on a university or equivalent publication.

LAND RESOURCES AND AGRICULTURAL SCIENCE

College of Biological Sciences and Renewable Resources

The undergraduate 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, conservation, etc.) and in agriculture.

Opportunities for summer employment are available through various state and federal agencies and through the University's Institute of Agricultural Sciences.

CURRICULUM

FALL SEMESTER

FIRST YEAR 16 or 16½ Credits

Engl. 111 — Written Communication	.3
Biol. 105 — Fund. of Biology	.4
Chem. 105 — General Chem.	.4
P.E. 100 or Mil. Sci.	.1 or 1½
Mathematics	.4

SECOND YEAR 17 or 17½ Credits

Phys. 103 — College Physics	.4
Geol. 101 — Gen. Geology	.4
Econ. 121 — Princ. of Econ.	.3
Engl. 211 or 213	.3
P.E. 100 or Mil. Sci.	.1 or 1½
Elective	.2

SPRING SEMESTER

15 or 16½ Credits

Chem. 106 — General Chem.	.4
P.E. 100 or Mil. Sci.	.1 or 1½
Mathematics	.4
Biol. Elective or L.R. 101	.2 or 3
Social Science Elective	.3
Elective	0-2

16 or 17½ Credits

Phys. 104 — College Physics	.4
P.E. 100 or Mil. Sci.	.1 or 1½
Approved Biology Elective	.4 or 3
Engl. Elective	.3
Soc. Sci. Elective	.3
Elective	.2

GRADUATE STUDY IN LAND RESOURCES

A program of graduate study in land resources is offered through the University's interdisciplinary graduate program. Personnel from various units of the University community participate in orientating individual studies toward M.S. and interdisciplinary Ph.D. degrees. Areas include forestry, watershed, range, land use, soils, water relations, agronomy, and other aspects of natural resources sciences and agriculture. Students interested in graduate work should write to the head, Department of Land Resources and Agricultural Sciences, outlining their area of interest and study objectives and academic background. Results from the Graduate Record Examination should be provided for the formal application.

LIBERAL ARTS

College of Arts and Letters

Degree — Associate of Arts in Liberal Arts

Minimum Requirements for Degree: 63 Credits

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

- I. General Education
 - A. Specific Requirements (14)
 - Engl. 111 and 211 or 213 — Comp. and Lit. 6
 - Hist. 131-132 — Hist. of U.S. 6
 - or
 - P.S. 101-102 — Intro. to Amer. Govt. 6
 - Sp.C. 51 — Basic Speech Communication Skills 2
 - B. General Requirements (18)
 - At least six credits each in three areas below:
 - 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)
 - One year of foreign language 6-10
 - or
 - Two years of one foreign language in high school.
 - Speech (Oral Communication) 3
 - Formal Humanities Course 4-6
 - B. Approved Electives (10-16)
 - of which six must be in one department.

A total of 60 credits is required for graduation.

LINGUISTICS AND FOREIGN LANGUAGES**College of Arts and Letters**

Degrees — Bachelor of Arts, Master of Arts, Master of Arts in Teaching

Minimum Requirements for Degree: B.A. — 130 Credits; M.A. — 30 Additional Credits; M.A.T. 30 Additional 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 literature liberates the student from the confines of his own culture and makes his own culture more meaningful to him.

**REQUIREMENTS FOR 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 16, including foreign language requirement.
2. Complete 26 credits beyond first year in the major language.
3. Complete three credits in a linguistics course.

**A MINOR IN A FOREIGN LANGUAGE REQUIRES FOUR SEMESTER (12 CREDITS) OF
STUDY IN THAT LANGUAGE BEYOND THE 102 LEVEL. (A MINOR IN ESKIMO ALSO
IS AVAILABLE.)**

For a major in Linguistics:

1. Complete general requirements for a B.A. degree as listed on page 16, including foreign language requirement.
2. Complete four semesters (12-16 credits) in language other than that offered as a 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.

REQUIREMENTS FOR M.A. DEGREE IN FRENCH

1. A minimum of 30 credits of approved courses including French 697-698, Thesis.
2. Completion of the general graduate degree requirements listed on page 18.
3. Proficiency in a foreign language other than French.

REQUIREMENTS FOR M.A.T. IN FRENCH

1. Thirty additional credits.
2. Proficiency in a foreign language other than French.
An interdisciplinary M.A. and an M.A.T. also are offered in other languages under certain conditions.

MATERIALS TECHNOLOGY

Anchorage Community College

Degree — Associate in Materials Technology**Minimum Requirements for Degree: A.M.T. — 66 Credits.****DEGREE REQUIREMENTS AND CURRICULUM FOR ASSOCIATE IN MATERIALS TECHNOLOGY**

High school graduation or equivalency is a requirement for entrance into this program. State certification in four welding processes is required for graduation.

FALL SEMESTER**FIRST YEAR 17 Credits**

M.T. 51 Tech. Math	3
M.T. 71 Prin. of Indust. Sci.	4
M.T. 57 Tech. Blueprints	2
Art 53 Freehand Shop Sketching	2
Sp.C. 111 — Oral Communication	3
M.T. 75 Welding Processes	3

SECOND YEAR 16 Credits

M.T. 88 — Automatic Systems	4
M.T. 85 — Materials Science	3
M.T. 82 — Code & Phys. Tests	2
M.T. 89 — Welding Metallurgy	4
Social Science Elective	3

SPRING SEMESTER**16 Credits**

M.T. 52 — Tech. Math	2
M.T. 72 — Physics for Welding	4
M.T. 73 — Electric Weld. Equip	3
English	3
Electives	3
M.T. 81 — Field Training	1

16 Credits

Social Science Elective	3
English 89 — Report Writing	3
M.T. 95 — Intro. to Polymers	3
M.T. 97 — Non-Destruct Testing	3
M.T. 98 — X-ray & Radioisotope Rad	4

MATHEMATICS

College of Mathematics, Physical Sciences and Engineering

Degrees — Bachelor of Arts, Bachelor of Science, Master of Arts in Teaching, Master of Science

Minimum Requirements for Degrees: B.A. — 130 Credits; B.S. — 130 Credits; M.A.T. — 30 Additional Credits; M.S. — 30 Additional Credits.

The number of new fields in which professional mathematicians find employment grows continually. The department offers a variety of programs for students majoring in mathematics.

Options exist for those who are planning careers in industry, government, or education.

In addition to the major programs, the department provides a number of service courses for the various units of the University.

DEGREE REQUIREMENTS

In addition to meeting all the general requirements for the specific degree, certain mathematics courses are required by 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 Alaskan Teaching Certificate.

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

1. Complete the general requirements for a B.A. degree as listed on page 16.
2. Complete the calculus sequence Math. 200, 201, 202.
3. Complete 15 approved credits in mathematics at the 300 level or above, at least six of which must be at the 400 level.

A MINOR IN MATHEMATICS REQUIRES COMPLETION OF MATH. 200, 201, 202 IN ADDITION TO SIX APPROVED CREDITS IN MATHEMATICS AT THE 300 LEVEL OR ABOVE.

REQUIREMENTS FOR B.S. DEGREE WITH A MAJOR IN MATHEMATICS

1. Complete the general requirements for a B.S. degree as listed on page 16.
2. Complete the calculus sequence Math. 200, 201, 202.
3. Complete Phys. 211-212 and six additional approved credits in upper division science courses.
4. Complete 18 approved credits in Mathematics at the 300 level or above, at least six of which must be at the 400 level. For those electing the Secondary Education Option, all 18 credits may be at the 300 level.

SUGGESTED CURRICULUM FOR B.S. DEGREE WITH A MAJOR IN MATHEMATICS

FALL SEMESTER

FIRST YEAR	16 or 16½ Credits
Engl. 111 — Written Communication	.3
Math. 200 — Calculus	.4
P.E. or Mil. Sci.	.1 or 1½
Phys. 103 — College Physics	.4
Elective	.4

SECOND YEAR	17 or 17½ Credits
Math. 202 — Calculus	.4
Math. 293 — Special Topics	.1
Chem. 105 — Gen. Chem.	.4
or	
Biol. 105 — Fund. of Biology	.4
P.E. or Mil. Sci.	.1 or 1½
Approved Elective	.7

SPRING SEMESTER

	16 or 16½ Credits
Sp.C. 111 — Fund. of Oral Communication	.3
Math. 201 — Calculus	.4
P.E. or Mil. Sci.	.1 or 1½
Physics 104 — College Physics	.4
Elective	.4

	16 or 16½ Credits
Math. 314 — Linear Algebra	.3
Math. 294 — Special Topics	.1
Chem. 106 — Gen. Chem.	.4
or	
Biol. Approved	.4
P.E. or Mil. Sci.	.1 or 1½
Approved Elective	.7

THIRD YEAR	17 Credits		17 Credits
Math. 319 — Intermediate Analysis	3	Math. 320 — Intermediate Analysis	3
Math. 303 — Intro. to Mod. Algebra	3	Math. 304 — Intro. to Mod. Algebra	3
Physics Elective	3	Physics Elective	3
English Elective	3	English Elective	3
Approved Electives	5	Approved Electives	5
FOURTH YEAR	17 Credits		17 Credits
Math. 403 — Intro. to Real Analysis	3	Math. 404 — Topics in Analysis	3
Social Science Elective	3	or Topology	
Approved Electives	11	Approved Electives	14

REQUIREMENTS FOR M.A.T. DEGREE WITH A MAJOR IN MATHEMATICS

1. Complete the general requirements for M.A.T. degree as listed on page 129.
2. Complete 30 credits in courses approved by the student's graduate committee.

REQUIREMENTS FOR M.S. DEGREE WITH A MAJOR IN MATHEMATICS

1. Complete the general requirements for a master's degree as listed on page 18.
2. Complete 30 credits in courses approved by the student's graduate committee.
3. Complete a final examination, including a demonstration of proficiency in mathematics at the graduate level. The means of such demonstration will be determined by the candidate and his graduate committee.

MECHANICAL ENGINEERING

College of Mathematics, Physical Sciences and Engineering

Degrees — Bachelor of Science (Engineering Science), Master of Mechanical Engineering, Master of Science

Minimum Requirements for Degrees: B.S. — 130 Credits; M.M.E. — 162 Credits; M.S. — 160 Credits;

Mechanical engineering includes the design of vehicles, engines, heating and power plants, and a wide variety of machines. Special emphasis is placed on transportation, heating and power generation systems suited to the environment of Alaska.

Candidates for the Bachelor of Science degree are expected to take the State of Alaska Engineer-in-Training examination during their fourth year of study.

Students whose goal is broad professional practice should enter their fifth year in the Master of Mechanical Engineering program. Those who desire a specialized program to prepare for research or advanced study should choose the Master of Science in Mechanical Engineering.

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

FALL SEMESTER

FIRST YEAR 16 or 16½ Credits

Engl. 111 — Meth. of Written Comm.	3
Math. 200 — Calculus	4
E.S. 101 — Graphics	2
E.S. 111 — Engineering Science	3
Econ. 121 — Principles of Econ.	3
P.E. or Mil. Sci.	1 or 1½

SECOND YEAR 16 or 16½ Credits

Math. 202 — Calculus	4
Phys. 211 — General Physics	4
E.S. 201 — Computer Techniques	3
P.E. or Mil. Sci.	1 or 1½
Chem. (approved)	4

THIRD YEAR 17 Credits

E.S. 301 — Engineering Analysis	3
E.S. 331 — Mech. of Materials	3
E.S. 341 — Fluid Mechanics	4
E.S. 307 — Elements of Elect. Eng.	4
M.E. 321 — Industrial Processes	3

FOURTH YEAR 16 Credits

M.E. 401 — Machine Design	3
M.E. 413 — Appl'd Thermodynamics	3
M.E. 441 — Mass & Energy Transfer	3
Social Science Elective	3
Elective	3
M.E. 491 — Seminar	1

SPRING SEMESTER

16 or 16½ Credits

Sp.C. 111 — Fund. of Oral Comm.	3
Math. 201 — Calculus	4
E.S. 102 — Graphics	2
E.S. 122 — Design	3
Social Science Elective	3
P.E. or Mil. Sci.	1 or 1½

16 or 16½ Credits

Math. 302 — Diff. Equations	3
Phys. 212 — General Physics	4
E.S. 208 — Mechanics	4
P.E. or Mil. Sci.	1 or 1½
Chem. (approved)	4

15 Credits

E.S. 346 — Thermodynamics	3
E.S. 308 — Instrumentation	3
Met. 304 — Metallurgy	3
Engl. 211 — Adv. Comp. with Modes of Lit. .	3
or	
Engl. 213 — Adv. Exposition	3
M.E. 302 — Kinematics	3

17 Credits

M.E. 402 — Dynamics of Machines	4
M.E. 414 — Thermal Systems	3
E.S. 450 — Management	3
English Elective	3
Elective	3
M.E. 492 — Seminar	1

REQUIREMENTS FOR THE MASTER OF MECHANICAL ENGINEERING DEGREE

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.

REQUIREMENTS FOR THE MASTER OF SCIENCE DEGREE

Persons interested in this program should see the head of the department.

MEDICAL TECHNOLOGY

College of Biological Sciences and Renewable Resources

Biological Sciences Department

Degree — Bachelor of Science

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 2.00 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.

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

FIRST YEAR	15 or 15½ Credits
Biol. 105 — Fund. of Biology .....	.4
Engl. 111 — Written Comm. ....	.3
Chem. 105 — General Chem. ....	.4
P.E. 100 or Mil. Sci. ....	.1 or 1½
Mathematics .....	.3

SECOND YEAR	17 or 18½ Credits
Biol. 201 — Elem. Vert. Anatomy .....	.3
or	
Biol. 217 — Comp. Anat. Verts. ....	.4
Eng. 211 or 213 — Adv. Exposition ....	.3
P.E. 100 or Mil. Sci. ....	.1 or 1½
* Approved Chem. Elective .....	.4
Soc. Sci. Elective .....	.3

THIRD YEAR	17 or 18 Credits
Biol. 341 — Gen. Microbiology .....	.4
Chem. 212 — Quant. Anal. ....	.4
Phys. 102 — College Physics .....	.4
** Foreign Language .....	.3 or .5
Elective .....	.0-3

SPRING SEMESTER

	15 or 15½ Credits
Biol. Elective .....	.4
Soc. Sci. Elective .....	.3
Chem. 106 — General Chem. ....	.4
P.E. 100 or Mil. Sci. ....	.1 or 1½
Mathematics .....	.3

	16 or 17½ Credits
Biol. 210 — General Physiology .....	.4
Biol. 302 — Genetics .....	.3
P.E. 100 or Mil. Sci. ....	.1 or 1½
Eng. Elective .....	.3
Soc. Sci. Elective .....	.3
General Elective .....	.2 or 3

	17 or 18 Credits
Biol. 342 — Gen. Microbiology .....	.4
Phys. 104 — College Physics .....	.4
Biol. Elective .....	.4
** Foreign Language .....	.3 or .5
Elective .....	.0-3

FOURTH YEAR **33 or 36 Credits**

Biol. 401 — Medical Technology	30
English Elective	3
General Elective	0-3

*Organic Chemistry recommended

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

MEDICINE (see Health Sciences, Pre-professional Curricula)**MILITARY SCIENCE****College of Behavioral Sciences and Education**

The mission of the Army Reserve Officers' Training Corps is to obtain well-educated officers to meet Army requirements; to provide a program at college level which will attract, motivate, and prepare selected students with potential to serve as commissioned officers in the Army Reserve or Regular Army.

The program of instruction is designed to complement the student's civilian goal of obtaining a baccalaureate degree in a course of study of his own choosing by enabling him to develop those attitudes and understandings that will facilitate transition to military service. The curriculum seeks to establish a base for normal progression in the commissioned officer educational program.

Senior Division ROTC is divided into the basic course for freshmen and sophomores and the advanced course for juniors and seniors.

Basic Course — All regularly enrolled, physically fit male students, without previous military service or training, between the ages of 14 and 23 are eligible for the basic course.

Advanced Course — Those students who successfully complete the basic course may apply for enrollment in the advanced course. Applicants must be physically qualified, have the approval of their dean, and be selected by the Professor of Military Science. Veterans may be allowed credit for prior federal service in lieu of the basic course for the purpose of admission to the advanced course. A contract is required of all students enrolling in the advanced course.

Allowance — Advanced course students receive a subsistence payment monthly which presently amounts to approximately \$1,000 for the two-year period.

Flight Training — The Army Flight Training Program is offered to Senior Cadets. Successful completion of the course qualifies the student for entry into the Army Aviation Program upon graduation and may qualify the student for a private pilot's license. Necessary texts, flying clothes, cost of lessons, and transportation are furnished by the Department of Military Science.

Uniforms and Equipment — Members of the basic and advanced course are furnished uniforms and texts by the Department of Military Science. Regulation gymnasium shoes available through the University Book Store are required for Leadership Laboratory. These shoes must be purchased by the individual student.

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 at Governor's Day ceremonies for outstanding achievement in the ROTC program, academic excellence, leadership, and various team awards.

ROTC Rifle Team — The ROTC Rifle Team competes in matches with both civilian and military rifle teams in the state. Postal matches with other colleges and universities are fired throughout the year. Rifles, targets, ammunition, shooting coats and gloves, and all necessary equipment are furnished by the Military Science Department at no cost to the cadet.

University of Alaska Rangers — The Ranger program is designed to permit individual cadets to further develop their leadership and abilities by participating in additional training in more advanced military skills. Training is conducted on-campus and at various military installations in Alaska. As the nature of the work involved is demanding, participation is voluntary.

Two-Year Program — A special program of instruction is also conducted for transfer students and others who were unable to take ROTC prior to their last two years in school. Students interested in the program are advised to consult the Professor of Military Science not later than March 1, annually.

Deferment — Upon successful completion of the first semester of the basic course, students may be granted deferment from induction under the terms of the Military Selective Service Act of 1967. Application must be made to the Professor of Military Science.

MINERAL ENGINEERING

College of Earth Sciences and Mineral Industry

Degrees — Associate in Mineral and Petroleum Technology, Bachelor of Science, Master of Science, Engineer of Mines

Minimum Requirements for Degrees: A.M.P.T. — 66 Credits; B.S. — 134 Credits; M.S. — 30 Additional Credits; *E.M. — Thesis and Five Years of Experience.

The two year associate degree in mineral and petroleum technology is designed to give technical training as a first undergraduate degree. Upon completion of this program, students are qualified to serve as technicians in mineral, petroleum and related areas.

In the mineral engineering curriculum, particular emphasis is placed upon engineering as it applies to the exploration and development of mineral resources and upon the economics of the

business of mining. The program requires core courses in engineering and humanities, but allows the student the choice of technical electives to major in an area of exploration, mining, mineral beneficiation or mineral economics.

Undergraduate Degrees — The Department of Mineral Engineering offers the Associate Degree in Mineral and Petroleum Technology and the Bachelor of Science Degree in Mineral 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 consists of core courses in engineering management with electives in mineral preparation, respectively. University policy pertaining to graduate study leading to a master's degree applies.

***Professional Degrees** — The graduate program also provides for the awarding of a professional degree, Engineer of Mines (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 AN ASSOCIATE DEGREE IN MINERAL AND PETROLEUM TECHNOLOGY

FALL SEMESTER		SPRING SEMESTER	
FIRST YEAR		FIRST YEAR	
	17 Credits		16 Credits
M.P.T. 61 — Math for Technicians	3✓	M.P.T. 62 — Mineralogy & Petrology	3✓
M.P.T. 63 — Map Reading & Drafting	2✓	M.P.T. 64 — Meas. & Mapping	3✓
M.P.T. 65 — Science for Technicians	3✓	M.P.T. 68 — Petroleum II	3✓
M.P.T. 67 — Petroleum I	3✓	Engl. 68 — Elementary Exposition	3✓
M.P.T. 69 — Geography & Geology	3✓	Min. 102 — Mining Engrg. Systems	4✓
Engl. 67 — Elementary Exposition	3✓		
SECOND YEAR		SECOND YEAR	
	17 Credits		16 Credits
M.P.T. 71 — Exploration Methods	3✓	M.P.T. 72 — Milling & Metallurgy	3✓
M.P.T. 73 — Technical Drawing	2✓	M.P.T. 74 — Lab Inst. & Control	3✓
M.P.T. 75 — Petroleum III	3✓	M.P.T. 76 — Petroleum IV	3✓
Math. 105 — Intermediate Algebra	3✓	M.P.T. 78 — Computer Applications	3✓
Social Science Elective	3✓	M.P.T. 80 — Intro: Min. & Pet. Econ.	3✓
Technical Elective	3	M.P.T. 82 — Field Trip	1✓

REQUIREMENTS AND CURRICULUM FOR B.S. DEGREE IN MINERAL ENGINEERING

FALL SEMESTER		SPRING SEMESTER	
FIRST YEAR		FIRST YEAR	
	17 or 17½ Credits		17 or 17½ Credits
Engl. 111 — methods of Written Communication	3	Sp.C. 111 Fund. of Oral Communication	3
Math. 200 — Calculus	4	Math. 201 — Calculus	4
E.S. 101 — Graphics	2	E.S. 102 — Graphics	2
E.S. 111 — Engineering Science	3	Social Science Elective	3
Geol. 111 — Physical Geology	4	Min. 102 — Min. Systems Engr	4
P.E. or Mil. Sci.	1 or 1½	P.E. or Mi. Sci	1 or 1½

FALL SEMESTER

SECOND YEAR	17 or 17½ Credits
Math. 202 — Calculus	4
Phys. 211 — General Physics	4
Chem. 211 — Chemical Principles	4
Geol. 213 — Mineralogy	4
P.E. or Mil. Sci.	1 or 1½

THIRD YEAR	16 Credits
Econ. 121 — Prin. of Econ.	3
Mn. Prep. 313 — Intro. to Min. Prep.	3
E.S. 307 — Elem. Elec. Engr.	4
Math. 302 — Diff. Equations	3
Social Science Elective	3

FOURTH YEAR	16 Credits
E.S. 331 — Mechanics of Materials	3
E.S. 341 — Fluid Mechanics	4
**Technical Electives	9

SPRING SEMESTER

	18 or 18½ Credits
Math. Elective	3
Phys. 212 — General Physics	4
Chem. 212 — Intro. Quantitative Analysis	4
Min. 202 — Mine surveying	3
Met. 304 — Intro. to Met.	3
P.E. or Mil. Sci.	1 or 1½
	16 Credits
E.S. 208 — Mechanics	4
*E.S. 346 — Basic Thermodynamics or	
Chem. 331 — Phys. Chem.	3
**Technical Elective	3
Eng. 211 or 213 — Advanced	
Exposition	3
E.S. 308 — Instru. & Measurements	3
	16 Credits
Min. 408 — Min. Val. & Econ.	4
Social Science Elective	3
English Elective	3
**Technical Elective	6

*Either E.S. 346 or Chem. 331 is required, depending upon student's field of interest.

**Twelve credits of technical electives must be in subject matter relative to the students field of major interest in the field of exploration, mining, mineral beneficiation or mineral economics.

A chemistry sequence of Chem. 105, 106, and 212 may be selected in place of Chem. 201 and 202 listed above.

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 listed in the mineral engineering curriculum. This course of study may be altered to include subject matter in petroleum engineering. Upon satisfactory completion of the two-year curriculum, students may transfer to a university having a petroleum engineering program and complete their course of study without loss of time or credit.

Selected subjects in petroleum engineering are currently offered, and it is anticipated that additional courses will be available in the near future.

TECHNICAL ELECTIVES — MINERAL PREPARATION ENGINEERING

Met. 312 — Fire Assaying	2
Mn. Prep. 314 — Unit Prep. Processes	3
Mn. Prep. 418 — X-ray, Spec. & El.M.	3
Mn. Prep. 431 — Applied Ore Microscopy	2
Mn. Prep. 433 — Coal Preparation	3
Min. 331 — Mining law	2
Min. 403 — Operations Research	3
Min. 402 — Energy Economics	3
Mn. Pr. 493 or 494 — Special Topics	3
Mn. Prep. 406 — Materials Handling	3

TECHNICAL ELECTIVES EXPLORATION ENGINEERING

Geol. 314 — Structural Geology	3
Min. 333 — Mining and Mineral Leasing Law	2
Geol. 416 — Principle of Geochemistry	3
Geol. 423 — Intro. to Geophysics	3
Geol. 404 — Economic Geology	3
Min. 403 — Operations Research	3
Min. 405 — Geophy. & Geochem	3
Mn. Prep. 418 — Spec., X-Ray, A.A. & El.M.	4
Min. 493 or 494 — Special Topics	3

**TECHNICAL ELECTIVES —
MINING ENGINEERING**

Pet. 302 — Oil Well Design & Production	3
Geol. 314 — Structural Geology	3
Min. 333 — Mining and Mineral Leasing Law	2
Min. 401 — Rock Mechanics	3
Min. 405 — Geophys. & Geochem. Expl.	3
Min. 406 — Min. Plant Engr.	4
Mn. Prep 406 — Materials Handling	3
Min. 403 — Operations Research	3
Geol. 404 — Economic Geology	3
Pet. 201 — Petrophysics	3

**TECHNICAL ELECTIVES — MINERAL
ECONOMICS**

Econ. 122 — Principles of Economics II	3
Econ. 321 — Intermediate Microeconomics	3
Econ. 337 — Economic Development	3
Econ. 351 — Public Finance & Taxation	3
Econ. 435 — Economics of Resources	3
Econ. 463 — International Economics	3
Min. 402 — Energy Economics	3
Min. 403 — Operations Research	3
B.A. 331 or 332 — Business Law	3
B.A. 343 — Marketing, Principles of	3
B.A. 360 — Production Management	3
B.A. 361 — Industrial Relation	3

REQUIREMENTS FOR M.S. DEGREE IN MINERAL PREPARATION ENGINEERING

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

Completion of the general requirements for a graduate degree as listed on page 18.

*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.

REQUIREMENTS FOR M.S. DEGREE IN MINERAL INDUSTRY MANAGEMENT

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	Approved Elective	6
Min. 621 — Adv. Mineral Economics	3	Min. 698 — Thesis	3
Approved Elective	3		

Completion of the general requirements for a graduate degree as listed on page 18.

MUSIC**College of Arts and Letters**

Degrees — Bachelor of Arts, Bachelor of Music

Minimum Requirements for Degrees: 130 Credits

The curriculum is designed to satisfy cultural and professional objectives.

The Bachelor of Arts degree in music is a curriculum planned for those desiring a broad, liberal education with a concentration in music.

The Bachelor of Music degree in Music Education offers thorough preparation in teacher training with sufficient time to develop excellence in performance areas.

The Bachelor of Music degree offers intensive specialization for those desiring professional training in music — the vocal and instrumental major.

The various music organizations maintained by the department offer participation experiences for students in all colleges of the University. Music majors will be required to participate in at least one ensemble each semester they are enrolled. A minimum of four semesters must be in large ensembles (Band, Choir, Orchestra, Chorus, Chamber Singers), whichever are most appropriate to the student's performance area. The remaining time may be in the ensemble of the student's choice. Piano majors may receive ensemble credit by performing as accompanists.

At the end of the sophomore year, all music majors must demonstrate a satisfactory level of proficiency of performance in their applied major in order to advance to upper division courses in music. A student may elect to continue study at the 200 level in attempting to pass requirements for admission to upper division study.

A piano proficiency examination must be successfully completed by the end of the student's second year in the program. This examination will consist of (1) performance of a recital composition equivalent in difficulty to a Bach two-part invention, or Clementi or Kuhlau sonatina; (2) sight reading of simple church hymn or Bach Chorales; (3) improvisation of a chordal accompaniment to a simple melody; and (4) transposition and harmonization of the same song to another key.

REQUIREMENTS FOR 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 as listed on page 16.
2. Complete 40 credits in Music including:

Mus. 131-132 — Basic Theory	6
Mus. 221-222 — History of Music	6
Mus. 231-232 — Advanced Theory	6
Mus. 331-332 — Form and Analysis	4
Mus. 491-492 — Senior Seminar	2
Applied Music, to include eight credits of private lessons and eight credits of ensemble participation	16
3. Piano proficiency examination to be completed by the end of the second year in the program.

For a major in Music Education:

1. Complete general requirements for a B.A. degree listed on page 16.
2. Complete 40 credits in Music including:

Mus. 131-132 — Basic Theory	6
Mus. 221-222 — History of Music	6
Mus. 231-232 — Advanced Theory	6
Mus. 315 — Music Methods and Techniques	6

- Applied Music, to include six credits of private lessons and ten credits of ensemble participation, to include two semesters of a vocal ensemble 16
3. Complete a minor in Education, including either Mus. 309, or Mus. 405.
 4. Piano proficiency examination to be completed by the end of the second year in the program.

REQUIREMENTS FOR A BACHELOR OF MUSIC DEGREE (PERFORMANCE)

Engl. Comp. and Lit., including Engl. 111 and 211 or 213	6
Humanities — Art, English, Foreign Language, Philosophy, Journalism, and Speech	11
Foreign Language	6-10
Hist. 101, 102 plus six hours in another Social Science	12
Mathematics or Natural Science	8
Physical Education or Military Science	4-6
Music:	
Required Courses:	
Mus. 161-462 — Applied Music (Major)	24
Mus. 131-132 — Basic Theory	6
Mus. 221-222 — History of Music	6
Mus. 231-232 — Advanced Theory	6
Ensembles	1 per Semester
Ten credits to be elected from the following courses:	
Mus. 331-332 — Form and Analysis	4
Mus. 431 — Counterpoint	3
Mus. 432 — Orchestration	3
Mus. 351 or 352 — Conducting	2
Mus. 493 — Lit. of Performance Area	3
Mus. 493-494 — Special Topics	Arr.
Piano proficiency	
Electives — to bring total credits to 130 credits.	

A half recital will be required in the junior year and a full recital in the senior year. The student, in his graduation recital, must demonstrate ability to perform satisfactorily in public a program of artistic merit.

REQUIREMENTS FOR A BACHELOR OF MUSIC DEGREE (MUSIC EDUCATION)

Engl. Comp. and Lit., including Engl. 111 and 211 or 213	6
Humanities — Art, English, Foreign Language, Philosophy, Journalism, and Speech	10
Foreign Language	6-10
Hist. 101-102 — Western Civilization	6
Psy. 101 — Intro. to Psychology	3
Psy. 246 — Adolescence	3
Mathematics or Natural Science	8
Physical Education or Military Science	4-6
Music:	
Required Courses:	
Mus. 161-462 — Applied Music (Major)	14
Mus. 131-132 — Basic Theory	6
Mus. 221-222 — History of Music	6
Mus. 231-232 — Advanced Theory	6
Mus. 315 — Music Methods and Techniques	10
Mus. 331 or 332 — Form and Analysis	2
Mus. 351 or 352 — Conducting	2
Mus. 432 — Orchestration	3

Ensembles 1 per semester
Piano proficiency

Education:

Required Courses:

Ed. 313 — Educational Psychology 3
Ed. 332 — Test and Measurements 3
Ed. 405 — Methods of Teaching Music 3
Ed. 421 — Secondary Education 3
Ed. 452 — Student Teaching 6

Electives — to bring total credits to 130 credits.

Students who desire to meet certification requirements for teaching music at the elementary school level should consult with the head of the Music Department concerning a petition to substitute required elementary level psychology and methods courses for similar courses in the Bachelor of Music (Music Education) curriculum.

A MINOR IN MUSIC REQUIRES 12 HOURS OF MUSIC CREDITS IN ADDITION TO 6 CREDITS IN:

Mus. 131-132 — Basic Theory 6
or
Mus. 123-124 — Intro. to Music 6

All music majors and minors are expected to attend all music department recitals and concerts.

All applied music students are expected to perform in student recitals each semester of study.

NURSING (see Health Sciences, Pre-professional Curricula)

OCEANOGRAPHY & OCEAN ENGINEERING PROGRAM
College of Mathematics, Physical Sciences and Engineering

Degrees — Master of Science (Interdisciplinary Degrees)
Doctor of Philosophy (Interdisciplinary Degree)

The purpose of the program in oceanography and ocean engineering is to train ocean engineers at the M.S. level and oceanographers at the M.S. and Ph.D. levels. The program in oceanography and ocean engineering is coordinated by an interdisciplinary committee of the University composed of selected staff members from the academic colleges and research institutes involved in these areas of graduate training.

Graduate students for this program are selected on the basis of their backgrounds and on the basis of the University's capabilities to meet the selected needs of the individual student. Each

student's application for admission to graduate study must be approved by an admission committee selected from members of the program's coordinating committee.

Excellent graduate training opportunities in oceanography and ocean engineering are offered by the University through the Institute of Marine Science, and the instructional colleges of the University. The Institute of Marine Science has a staff of scientists and engineers actively engaged in oceanographic research work progressing at the main campus of the University in College, at the Marine Station in Douglas, and on research vessels at sea. The departments of chemistry, physics, geology, biological sciences, electrical engineering, civil engineering, engineering management, and mathematics, contribute academic courses to this program.

At the M.S. level, the program emphasizes ocean related course work in both the oceanography and ocean engineering areas. However, additional graduate courses are recommended in the area of the student's undergraduate training to assure a high level of competence in his primary subject.

OFFICE ADMINISTRATION

College of Business, Economics and Government

Degrees — Bachelor of Arts with a major in Office Administration or Business Education, Associate in Office Administration, Certificate in Secretarial Service

Minimum Requirements for Degrees: B.A. — 130 Credits; A.O.A. — 60 Credits; Certificate — 30 Credits.

This 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 Office Administration degree with a major in office administration. (4) a one-year certificate issued after completion of 30 credits with emphasis placed on typewriting, machine transcription, filing, and the English language.

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

1. Complete the requirements for the B.A. degree listed on page 16.
2. Complete the following required courses:

Acc. 101+102, or 201 — Elementary Accounting	5-6
O.A. 101 — Beginning Shorthand or approved elective	3
O.A. 102 — Intermediate Shorthand	3
O.A. 105 — Intermediate Typewriting	2
O.A. 106 — Advanced Typewriting	2

	O.A. 201 — Advanced Shorthand	3
	O.A. 202 — Advanced Dictation and Transcription	3
	O.A. 203 — Office Machines	3
	O.A. 208 — Machine Transcription and Filing	3
	O.A. 231 — Business Correspondence	3
	O.A. 302 — Executive Secretarial Procedures	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. 246 — Adolescence	3
	Ed. 313 — Educational Psychology	3
	Ed. 332 — Tests and Measurements	3
	Ed. 408 — Methods of Teaching B. Ed. Subjects	3
	Ed. 421 — Secondary Education	3
	Ed. 452 — Directed Teaching	6

REQUIREMENTS FOR A.O.A. DEGREE

1.	Complete the following general requirements:	
	Acc. 101+102, or 201 — Elementary Accounting	5-6
	Econ. 121 — Principles of Economics I	3
	Econ. 122 — Principles of Economics II	3
	or	
	P.S. 101 — Intro. to Amer. Government	3
	Engl. 111 — Meth. of Written Communication	3
	Engl. 211 — Adv. Comp. and Modes of Lit.	3
	or	
	Engl. 213 — Adv. Exposition	3
	Math. 110 — Math of Finance	3
	Sp.C. 111 — Fund. of Oral Communication	3
	Soc. 101 — Intro. to Sociology	3
	or	
	Psy. 101 — Intro. to Psychology	3
2.	Complete the following required courses in Office Administration:	
	O.A. 101 — Beginning Shorthand (or approved elective)	3
	O.A. 102 — Intermediate Shorthand (or approved electives)	3
	O.A. 105 — Intermediate Typewriting	2
	O.A. 106 — Advanced Typewriting	2
	O.A. 201 — Intermediate Shorthand	3
	O.A. 202 — Advanced Dictation & Transcription	3
	O.A. 203 — Office Machines	3
	O.A. 208 — Machine Transcription and Filing	3
	O.A. 231 — Business Correspondence	3
	Approved Electives	9

REQUIREMENTS FOR ONE-YEAR CERTIFICATE IN SECRETARIAL SERVICE

1st Semester	
	Engl. 67 — Elementary Exposition
	Sp.C. 51 — Basic Speech Comm. Skills

O.A. 105 — Intermediate Typewriting	2
O.A. 61 — Clerical Skills	3
O.A. 65 — Machine Transcription	3
or	
O.A. 102 — Intermediate Shorthand	3
O.A. 63 — Adding and Calculating Machines	3
2nd Semester	
Engl. 68 — Elementary Exposition	3
O.A. 106 — Advanced Typewriting	2
O.A. 66 — Machine Transcription	3
or	
O.A. 201 — Advanced Shorthand	3
O.A. 99 — Office Practicum	6

PEACE ARTS

Interdisciplinary Program

Degree — Bachelor of Arts

Minimum Requirements for Degree: B.A. — 130 credits.

Beginning in September 1971, the University of Alaska will offer an interdisciplinary program leading to the degree of Bachelor of Arts in Peace Arts. The program is intended to recognize the paramount importance of promoting the pursuit of peace and to prepare the student for service in the broad area of international (peace) relations, ranging from service with the U.S. Government abroad (e.g. Department of State and U.S. Information Agency) to employment with international organizations, foundations and other private groups.

The curriculum will comprise traditional elements of area studies (intensive language training, geography, history, anthropology, culture, among others) and courses in subjects such as the history of peace-making and peace-keeping. Also planned is a peace techniques practicum to consider behavioral approaches through gaming, role playing and case studies. Further, the curriculum will address itself to problems encountered in working in unfamiliar cultural environments. Visiting practitioners of these arts will be invited to participate in courses from time to time to provide the necessary link with practicality. Each student will specialize in one region of the world, which will determine his language and area concentration.

A detailed course of study is being developed and will be available as a supplement to the 1971-1972 catalog of the University of Alaska by May 1, 1971. Further information may be obtained by writing to Walter J. Mueller, College of Arts and Letters, University of Alaska, College, Alaska 99701.

PHILOSOPHY

College of Arts and Letters

Degrees — Bachelor of Arts

Minimum Requirements for Degree: 130 Credits.

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 perspectives for the various areas of specialization in science, the social sciences, and humanities.

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

1. Complete general requirements for a B.A. degree as listed on page 16.
2. Complete a year sequence in mathematics.
3. Complete 33 credits in Philosophy, including

Phil. 201 — Introduction to Philosophy	3
Phil. 202 — Introduction to Eastern Philosophy	3
Phil. 204 — Introduction to Logic	3
Phil. 351-352 — History of Philosophy	6
Phil. 471 — Contemporary Philosophical Problems	3
Phil. 493 or 494 — Special Topics	3

 Choose two courses out of the following:

Phil. 321 — Aesthetics	3
Phil. 332 — Ethics	3
Phil. 341 — Epistemology	3
Phil. 342 — Metaphysics	3

 Choose two of the following:

Phil. 481 — Philosophy of Science	3
Phil. 482 — Comparative Religion	3
Phil. 483 — Philosophy of Social Science	3
Phil. 484 — Philosophy of History	3

A MINOR IN PHILOSOPHY REQUIRES 18 CREDITS OF APPROVED PHILOSOPHY COURSES INCLUDING:

Phil. 201 — Introduction to Philosophy	3
Phil. 351-352 — History of Philosophy	6
Phil. 471 — Contemp. Philosophical Problems	3
Choose six credits from the following:	
Phil. 202 — Introduction to Eastern Philosophy	3
Phil. 204 — Introduction to Logic	3
Phil. 321 — Aesthetics	3
Phil. 332 — Ethics	3
Phil. 341 — Epistemology	3
Phil. 342 — Metaphysics	3
Phil. 481 — Philosophy of Science	3
Phil. 482 — Comparative Religion	3
Phil. 483 — Philosophy of Social Science	3
Phil. 484 — Philosophy of History	3
Phil. 493 — Special Topics	*
Phil. 494 — Special Topics	*

*Credits Arranged.

PHYSICAL THERAPY (see Health Sciences, Pre-professional Curricula)

PHYSICS**College of Mathematics, Physical Sciences and Engineering**

Degrees — Bachelor of Arts, Bachelor of Science, Master of Science, Master of Arts in Teaching, Doctor of Philosophy

Minimum Requirements for Degrees: B.A. — 130 Credits; B.S. — 130 Credits; M.S. — 30 Additional Credits; M.A.T. — 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 of 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, experimental atomic and molecular physics, 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, and laboratory studies of atomic and molecular interactions.

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.

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

1. Complete the general requirements for a B.A. degree listed on page 16.
2. Complete the following foundation courses: Phys. 103-104 — College Physics 8
3. Complete a minor in Mathematics, which includes Math. 200, 201, 202, and six credits at the 300 level or above.
4. Complete 20 credits of approved courses in Physics.

A MINOR IN PHYSICS REQUIRES 12-16 CREDITS.

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

FALL SEMESTER

FIRST YEAR 16 or 16½ Credits

Engl. 111 — Meth. of Written Comm.	3
Phys. 103 — College Physics	4
Math. 200 — Calculus	4
P.E. or Mil. Sci.	1 or 1½
*Approved Electives	4

SECOND YEAR 16 or 16½ Credits

Math. 202 — Calculus	4
Phys. 211 — General Physics	4
**Foreign Language	3
P.E. or Mil. Sci.	1 or 1½
*Approved Electives	4

THIRD YEAR 16 Credits

Phys. 311 — Classical Physics	4
Phys. 331 — Electricity and Magnetism	3
Phys. 381 — Physics Lab or	
Phys. 481 — Advanced Physics Lab	3
Math. 319 — Intermediate Analysis or	
Math. 405 — Applied Mathematics	3
*Approved Electives	4

FOURTH YEAR 17 Credits

Phys. 411 — Modern Physics	4
Phys. 313 — Classical Phys.	4
*Approved Electives	9

SPRING SEMESTER

16 or 16½ Credits

Sp. C. 111 — Fund. of Oral Comm.	3
Phys. 104 — College Physics	4
Math. 201 — Calculus	4
P.E. or Mil. Sci.	1 or 1½
*Approved Electives	4

17 or 17½ Credits

Math. 314 — Linear Algebra	3
Math. 302 — Differential Equations	3
Phys. 212 — General Physics	4
**Foreign Language	3
P.E. or Mil. Sci.	1 or 1½
*Approved Electives	3

16 Credits

Phys. 312 — Classical Physics	4
Phys. 332 — Electricity and Magnetism	3
Phys. 382 — Physics Lab or	
Phys. 482 — Advanced Physics Lab	2
Math. 320 — Intermediate Analysis or	
Math. 405 — Applied Mathematics	3
*Approved Electives	4

16 Credits

Phys. 412 — Modern Physics	4
Phys. 445 — Solid State Physics and	
Physical Electronics	4
*Approved Electives	8

*Nine credits of electives must be social science, six must be English, and eight must be chemistry or biology.

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

REQUIREMENTS FOR 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 18.

REQUIREMENTS FOR M.A.T. DEGREE

Persons interested in this degree program should see the head of the department.

REQUIREMENTS FOR Ph.D. DEGREE IN PHYSICS OR GEOPHYSICS

Completion of the requirements for the doctoral degree set forth on page 20.

POLICE ADMINISTRATION PROGRAM
College of Business, Economics and Government

Degree — Associate of Arts in Police Administration

Minimum Requirements for Associate Degree: 65 Credits

1. General Requirements: 32 credits
 - †English 6
 - Speech 2
 - †Political Science 101-102 6
 - †Psychology 101 3
 - †Sociology 101 3
 - †Natural Science or Math 6
 - †Humanities or Other (Electives) 6
2. Elective Courses in Social Science: 12 credits
 - Psychology
 - †Sociology
 - Political Science
 - †Anthropology
 - Behavioral Science
3. Core Courses: 12 credits
 - **P.A. 110 — Intro. to Criminal Justice 3
 - P.A. 251 — Criminology or
 - *P.A. 151-C — Intro. to Criminology 3
 - ** P.A. 252 — Criminal Law 3
 - P.A. 254 — Procedural Law 3
4. Elective Courses in Police Administration: 9 credits
 - P.A. 150 — Police Administration 3
 - *P.A. 156-C — Patrol Procedures 3
 - *P.A. 159-C — Organization, Management, and Administration 3
 - **P.A. 225 — Criminal Investigation 3
 - P.A. 257 — Traffic Safety 3
 - **P.A. 258 — Juveniles and the Law 3
 - P.S. 259 — Administrative Concepts 3
 - Soc. 210 — Principles of Correction 3

†These requirements can be fulfilled, either partially or in full through Correspondence Study

*These courses are offered in Correspondence Study only.

**These courses are available for Correspondence Study also.

REQUIREMENTS FOR B.A. DEGREE WITH A MINOR IN POLICE ADMINISTRATION

1. Complete the general requirements for a B.A. degree listed on page 16.
2. Complete 12 credits in Police Administration including:
 - P.A. 110 — Intro. to Criminal Justice 3
 - P.A. 251 — Criminology 3
 - P.A. 252 — Criminal Law 3
 - P.A. 254 — Procedural Law 3

3. Complete 9 credits of electives in Police Administration from the following:

P.A. 150 — Police Administration	3
P.A. 255 — Criminal Investigation	3
P.A. 257 — Traffic Safety	3
P.A. 258 — Juveniles and the Law	3
P.S. 259 — Administrative Concepts	3
Soc. 210 — Principles of Correction	3

POLITICAL SCIENCE

College of Business, Economics and Government

Degrees — Bachelor of Arts, Master of Public Administration

Minimum Requirements for Degrees: B.A. — 130 Credits; M.P.A. — 30 Additional 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 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 B.A. DEGREE WITH A POLITICAL SCIENCE MAJOR

1. Complete the general requirements for a B.A. degree listed on page 16.
2. Complete the following foundation courses:

Hist. 101-102 — Western Civilization	6
Hist. 131-132 — History of the U.S.	6
Econ. 121-122 — Principles of Economics	6
Phil. 201 — Intro. to Philosophy	3
Econ. 221 — Interpretation of Economic and Business Data	3
3. Complete the following required courses:

P.S. 101-102 — Intro. to Amer. Govt. and Pol. Sci.	6
P.S. 201 — Comp. Politics: Methods of Political Analysis	3
P.S. 202 — Comp. Politics: Contemp. Doctrines and Structures	3
P.S. 321-322 — International Politics	6
P.S. 401-402 — Political Behavior	6
Six credits in Political Theory from the following:	
P.S. 315, 411 or 412	6

A MINOR IN POLITICAL SCIENCE REQUIRES 15 HOURS OF CREDIT DISTRIBUTED AS FOLLOWS:

- | | |
|---|---|
| P.S. 101-102 — Intro. to Amer. Govt. and Pol. Sci. | 6 |
| P.S. 201 or 202 — Comparative Politics: Political Analysis and Doctrines and Structures | 3 |
| P.S. 321 or 322 — International Politics | 3 |
| Three credits in Political Theory from the following: | |
| P.S. 315, 411 or 412. | |

GENERAL REQUIREMENTS FOR THE MASTER OF PUBLIC ADMINISTRATION DEGREE

1. Completion of the general requirements for a graduate degree listed on page 18.
2. Completion of thirty semester-hours of graduate credit with a grade average of "B" or better, including 15 credit hours from the following courses: P.S. 601, 610, 612, 615, 618, 625. Students lacking administrative experience are required to take P.S. 620.
3. Completion of electives to bring the total to thirty semester hours of graduate credit from the following political science graduate level courses: P.S. 630, 632, 634, 689, 697-698. With the approval of the student's advisory committee, relevant 300, 400 and 600 level courses in the University catalog may be taken for MPA degree credit. A partial list of these courses includes: Acc. 418; Anth. 342, 427; B.A. 480; C.E. 469; E.M. 605, 613, 621, 623; Econ. 351, 435, 687; Ed. 446; P.S. 401, 402, 415, 434; Soc. 306, 401, 404.
4. In lieu of a comprehensive written examination covering broad aspects of the field of public administration and related to the student's program, the candidate may elect to conduct a thesis or research project. The paper or field project, which should test the candidate's capacity to undertake independent research and to apply the knowledge and skills acquired during the graduate program, may count for three to six units of degree credit. The topic shall be approved by the student's advisory committee and the student shall be examined on his research essay in accordance with the Manual of Procedures for Graduate Students.
5. When the nature of the student's program warrants it, demonstrated competence in the fields of statistics, budgeting or computer programming may be required. This requirement may be satisfied by taking a standardized exam or by taking a course in one of the above areas as determined by the student's advisory committee. Alternatively, demonstrated competence in a foreign language may be required.

Although some of the courses in the program are available at several campuses throughout the state, at present, the program is available in its entirety only at the University of Alaska, Juneau.

PSYCHOLOGY

College of Behavioral Sciences and Education

Degrees — Bachelor of Arts, Bachelor of Science, Master of Science in Counseling Psychology

Minimum Requirements for Degrees: B.A. — 130 Credits; B.S. — 130 Credits; M.S. in Counseling Psychology — 36 Additional Credits.

Psychology seeks to guide the student in an understanding of human behavior. The field of psychology is necessary for students who are preparing for graduate study in psychology and also is helpful in preparing for other career fields.

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

1. Complete general requirements for a B.A. or B.S. degree as listed on page 16.

2. Complete 32 credits in Psychology beyond Psy. 101 and 201, including:
 - Psy. 251 — Intro. Statistics for Behavioral Sciences (Soc) 3
 - Psy. 261 — Intro. to Experimental Psychology 3
 - Psy. 301 — History and Systems of Psychology 3
3. And eight credits from the following courses:
 - Psy. 362 — Intermediate Experimental Psychology 3
 - Psy. 373 — Psychological Testing 3
 - Psy. 465 — Comparative and Physiological Psychology 3
 - Psy. 473 — Social Science Research Methods (Soc) 3
4. And six credits from the following courses:
 - Psy. 406 — Theories of Personality 3
 - Psy. 407 — Motivation 3
 - Psy. 464 — Learning 3
 - Psy. 466 — Perception 3
5. And six credits from the following courses:
 - Psy. 245 — Child Development (H.E.) 3
 - Psy. 246 — Adolescence (Soc) 3
 - Psy. 302 — Social Psychology (Soc) 3
 - Psy. 433 — Clinical Psychology 3
6. And in consultation with advisor, it is recommended that one course each be chosen from Anthropology, Philosophy, and Sociology.

A MINOR IN PSYCHOLOGY REQUIRES 15 CREDITS IN PSYCHOLOGY BEYOND PSY. 101 AND 201.

REQUIREMENTS FOR AN M.S. DEGREE IN COUNSELING PSYCHOLOGY

This curriculum is designed for counselors who are engaged in counseling within an agency setting. It includes the theory, personality dynamics, resources, methods and understanding of community organizations and services, and practicum training used to counsel effectively. Thirty-six hours of course work are required.

An applicant must have an accredited degree within the behavioral sciences. His undergraduate record should be above average and indicate an intellectual capacity, seriousness, maturity and other factors favorable to success in counseling.

Typical Courses:

Psy. 623 — Individual Counseling	3
Psy. 624 — Group Counseling	3
Psy. 628 — Analysis of the Individual	3
Psy. 629 — Individual Tests of Intelligence	3
Psy. 630 — Laboratory in Individual Tests of Intelligence	3
Psy. 632 — Occupational Information	3
Psy. 634 — Counseling Practicum	3
Psy. 697 — Thesis	6
Up to 15 hours of undergraduate courses may be taken with committee approval, such as:	
Psy. 331 — Industrial Psychology	3
Psy. 338 — Abnormal Psychology	3
Psy. 373 — Psychological Testing	3
Psy. 406 — Theories of Personality	3
Psy. 464 — Learning	3
Psy. 473 — Social Science Research Methods	3
Psy. 492 — Seminar in Human Behavior	2

In order to fulfill the degree requirements, 36 hours of course work and an investigative paper must be approved by the student's committee. Students with teaching experience may register for core courses in education and work toward a M.Ed. degree.

Completion of the general requirements for a graduate degree as listed on page 18.

SOCIOLOGY

College of Behavioral Sciences and Education

Degrees — Bachelor of Arts, Bachelor of Science

Minimum Requirements for Degrees: B.A. — 130 Credits; B.S. — 130 Credits.

Sociology is the study of groups and their influence on personal behavior and culture. It is concerned with social processes which give rise to and shape man's language, experience, perception, meaning, and behavior.

Sociology option: a concentration in social services is offered which concerns itself with the knowledge and methods used in the social institutions for the maintenance and enhancement of human social functioning. The social services include counseling, social work, social welfare, corrections, probation, and parole.

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

1. Complete general requirements for a B.A. or B.S. degree as listed on page 16.
2. Complete 32 credits in Sociology beyond Soc. 101-102, including:

Soc. 251 — Intro. Statistics for Behavioral Sciences (Psy.)	3
Soc. 302 — Social Psychology (Psy.)	3
Soc. 309 — Urban Sociology	3
Soc. 363 — Social Stratification	3
Soc. 402 — Theories of Sociology	3
Soc. 407 — Formal Organizations	3
Soc. 473 — Social Science Research Methods (Psy.)	3

A MINOR IN SOCIOLOGY REQUIRES 15 CREDITS IN SOCIOLOGY BEYOND SOC. 101-102.

SOCIOLOGY OPTION

REQUIREMENTS FOR A SOCIOLOGY MAJOR B.A. OR B.S. DEGREE WITH A CONCENTRATION IN SOCIAL SERVICES

1. Complete general requirements for a B.A. or B.S. degree as listed on page 16.
3. And 11 credits of Sociology electives.
4. And in consultation with advisor it is recommended that one course each be chosen from Anthropology, Philosophy, and Psychology.

2. Complete 32 credits beyond Soc 101-102 and Psy. 101-201. Required in the 32 credits are:

Soc. 201 — Social Problems	3
Soc. 251 — Intro. Statistics for Behavioral Sciences (Psy.)	3
Soc. 333 — Social Welfare as a Social Institution	3
Soc. 336 — Social Work Methods	3
Soc. 363 — Social Stratification	3
Soc. 383 — Field Observation	2-3
3. And 11 credits from the following courses:

Soc. 242 — The Family	3
Soc. 302 — Social Psychology (Psy.)	3
Soc. 304 — Culture and Personality	3
Soc. 309 — Urban Sociology	3
Soc. 343 — Sociology of Deviant Behavior	3
Soc. 408 — American Minority Groups	3
4. And 3-5 credits from the following courses:

Psy. 245 — Child Development (H.E.)	3
Psy. 246 — Adolescence (Soc.)	3
Psy. 338 — Abnormal Psychology	3
Psy. 433 — Clinical Psychology	3
5. And in consultation with advisor it is recommended that one course each be chosen from Anthropology, Philosophy, and Political Science.

SPEECH, DRAMA, AND RADIO

College of Arts and Letters

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 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 depends 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 B.A. DEGREE WITH A SPEECH MAJOR

1. Complete general requirements for B.A. degree as listed on page 16.
2. Complete 24 credits in Speech beyond Sp.C. 111, including:

Thr. 211 — Introduction to Theater	3
Brd. 211 — Introduction to Broadcasting	3
Sp.C. 311 — Phonetics	3
Sp.C. 211 — 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 No. 2 (above):

Sp.C. 242 — Public Speaking II	2
Sp.C. 351 — Argumentation and Debate	3
Sp.C. 235 — Discussion	3
Sp.C. 361 — 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 No. 2 (above):

Thr. 221 — Acting I	3
Thr. 331 — Theater Production	3
Thr. 351 — Makeup for Theater	2
Thr. 435 — Directing	3
or	
Thr. 321 — Acting II	3
Psy. 101 — Introduction to Psychology	3
5. A Speech major may elect to take an option in Broadcasting by adding the following courses to these specifically required in No. 2 (above):

Brd. 213 — Announcing	2
Brd. 217 — Writing for Radio and Television	3
Brd. 331 — Radio-Television Advertising	3
or	
Brd. 341 — Radio-Television News	3
Brd. 215 — Broadcast Production	3

A MINOR IN SPEECH REQUIRES 12 CREDITS OF APPROVED SPEECH ELECTIVES

VETERINARY MEDICINE

Students planning to become veterinarians are required to complete at least two or three years of pre-veterinary study at the college level. Upon completion of these studies, a student applies for admission to the professional school of veterinary medicine of his choice. Pre-veterinary students usually enroll in the Department of Biological Sciences, where they follow a sequence of courses designed to meet specific needs. Pre-veterinary studies normally include English, general and organic chemistry, mathematics, physics, biological sciences, animal science, and some experience in the care and handling of animals.

WILDLIFE MANAGEMENT

College of Biological Sciences and Renewable Resources

Degrees — Bachelor of Science, Master of Science

Minimum requirements for degrees: B.S. — 135 credits; M.S. — 30 additional credits

The wildlife management curriculum in the undergraduate program in the Department of Wildlife Management is intended to provide 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 curriculum a solid foundation for graduate study.

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 B.S. DEGREE WITH A MAJOR IN WILDLIFE MANAGEMENT

FALL SEMESTER

FIRST YEAR	16 or 16½ Credits
Biol. 105 — Fund. of Biology	4
Chem. 105 — General Chemistry	4
Engl. 111 — Methods of Written Comm	3
**Mathematics	4
P.E. 100 or Mil. Sci.	1 or 1½

SECOND YEAR

	16 or 16½ Credits
Biol. 217 — Comp. Anatomy of Vert.	4
Biol. 303 — Ecology	3
Geol. 101 or 111 — General or Physical Geology	4
Phys. 103 — College Physics	4
P.E. 100 or Mil. Sci.	1 or 1½

SPRING SEMESTER

FIRST YEAR	16 or 16½ Credits
*Biol. 210 — General Physiology	4
Chem. 106 — General Chem	4
Soc. Sci. Elective	3
**Mathematics	4
P.E. 100 or Mil. Sci.	1 or 1½

	15 or 15½ Credits
Biol. 239 — Plant Form & Function	4
Land Res. 101 — Cons. Natural Res.	2
Applied Stat. 301 — Elementary Statistics	3
Phys. 104 — College Physics	4
P.E. 100 or Mil. Sci.	1 or 1½

FALL SEMESTER

THIRD YEAR	17 Credits
Biol. 309 — Biol. of the Vert.	4
Biol. 331 — Systematic Botany	4
***Foreign Language	3
W.M. 301 — Pop. Dynamics and Management	3
Engl. 211 or 213 — Adv. Exposition	3

SPRING SEMESTER

	16 or 17 credits****
Biol. 310 — Biol. of the Vert.	4
Land Res. 311 — Soils	3
or	
Elective	3 or 4
Applied Stat. 402 — Scientific Sampling	3
***Foreign Language	3
Engl. Elective	3

FOURTH YEAR	14+ Credits****
Econ. 121 — Princ. of Economics	3
W.M. 333 — Lit. of Ecology	1
W.M. 423 — Limnology	3
or	
Geol. 411 — General Oceanography	3
W.M. 429 — General Fisheries Biol.	3

	16+ Credits****
Biol. 414 — Comp. Physiology	4
Engl. 314 — Research Writing	3
W.M. 492 — Seminar	1
or	
W.M. 494 — Special Topics	1
Land Res. 311 — Soils	3
or	
Elective	3
C.E. 116 — Mapping	3
W.M. 402 — Wildlife Biology & Mgmt.	2

*Note prerequisite

**A year's sequence of mathematics including Math. 200 will be worked out with the student's advisor.

***One year of foreign language taken at the University level. Students having three or four years of a language in high school with a grade of "C" or better, may, with advisor's approval, substitute an equivalent number of credits in the humanities area.

****Sufficient elective credits to satisfy the minimum requirement of 135 credits are needed; six of these must be from courses which will satisfy the University's social science requirement. All electives must be approved by the head of the 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 type-written 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 M.S. DEGREE WITH A MAJOR IN WILDLIFE MANAGEMENT

1. A minimum of 30 credits of approved courses, including W.M. 697-698, Thesis, in the field of wildlife management.
2. Complete the general requirements for a graduate degree as listed on page 18.
3. Students working in subject areas involving significant non-English literature will be expected to read the appropriate foreign language.

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. An interdisciplinary Doctor of Philosophy degree can also be offered. 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.



The glowing beauty of the aurora borealis brightens many winter nights in interior Alaska.

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. For example, Engl. 101 is given for first-year students and Engl. 342 is given for third-year students.

1-49 — Non-credit courses.

50-99 — Courses designed for associate degree or a technical certificate; 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.

93, 94, 193, 194, 293, 294, 393, 394 — Special Topics courses in certain departments.

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 695-698 indicate thesis or dissertation in those departments where listed.

COURSE CREDITS — One credit (or one hour) represents satisfactory completion of one hour of work a week for one semester. This requirement may be met by attendance at one lecture, or by three fifty-minute periods of laboratory work a week, or the equivalent.

Following the title of each course, the figures in parentheses indicate the number of lecture and laboratory hours the class meets. The first figure indicates lecture hours; the second, laboratory. For example (2+3) indicates that a class has two hours of lecture and three of laboratory work.

The number of credits listed is for each semester. Thus "Three Credits" means three credits may be earned.

COURSE CLASSIFICATIONS — Subjects and courses are classified as below:

Natural Sciences

Anthropology 402
Biological Sciences
Chemistry
Geography 105, 316,
and 401
Geology
Mathematics
Physics

Social Sciences

Anthropology
Business Administration
331, 332
Economics
Geography except
105, 316, and 401
History
Home Economics 236, 351
Political Science
Psychology
Sociology

Humanities

Art
English
Foreign Language
and Literature
Journalism
Linguistics
Music
Philosophy
Speech and Drama

ACCOUNTING

Acc. 51 3 Credits Fall-Spring
Introduction to Accounting I (3+0)

This course is designed for the general business student for whom it may be the final study in accounting; or, for the accounting major who intends to continue the study of accounting. This course covers the fundamental accounting processes dealing with the book-keeping and accounting functions for a sole proprietorship. It is an introduction to the theory and principles of accounting as applied to the modern business field. *Offered only at ACC.*

Acc. 52 3 Credits Fall-Spring
Introduction to Accounting II (3+0)

A continuation of Accounting I. It familiarizes the student with partnership and corporate accounting. Special emphasis is directed to contemporary interest and subject matter including analysis of cash-flow and fund-flow and certain other supplementary financial statement presentations. *Offered only at ACC.*

Acc. 71 3 Credits Fall-Spring
Introduction to Accounting III (3+0)

This course is designed for the accounting major and prepares the student to analyze and interpret the full product of accounting. Emphasis is devoted to current accounting principles and postulates, data processing and contemporary financial statement practices and forms. *Offered only at ACC.*

Acc. 83 3 Credits Fall-Spring
Accounting — Case Studies (3+0)

Case studies of selected accounting systems and problems — small municipality, non-profit corporation, sole proprietorship, partnership, small corporation. *Offered only at ACC.*

Acc. 84 3 Credits Fall-Spring
Accounting for Small Cities
and Municipalities (3+0)

An introductory course for the accounting student concerning the accounting principles involved with municipal and governmental accounting. Budgetary processes, fund accounting and governmental financial statement presentation are the basic subject matter. In addition, the student is introduced to accounting processes currently in use relating to non-profit organizations such as lodges, churches and charitable organizations. *Offered only at ACC.*

Acc. 85 3 Credits Fall-Spring
Tax Accounting (3+0)

An introductory course for the accounting major relating to federal and state income taxes as applied to individuals. Social security, unemployment taxes and other miscellaneous business taxes are covered relating both to employee and employer.

Acc. 94 3 Credits Fall-Spring
Internship in Accounting (3+0)

Placement with appropriate agency or business to familiarize the second year student with practical experience in the field of accounting. *Offered only at ACC.*

Acc. 101 3 Credits Fall
Elementary Accounting (3+0)

An introduction course in accounting concepts and procedures for service businesses and for merchandising businesses owned by a single proprietor. (Prerequisite: completion of all required remedial courses.)

Acc. 102 3 Credits Spring
Elementary Accounting (3+0)

A continuation of introductory accounting concepts and procedures emphasizing the problems of businesses organized as partnerships or corporations and performing manufacturing operations. (Prerequisite: Acc. 101.)

Acc. 210 3 Credits Spring
Income Tax (3+0)

A study of federal and state income taxes relating primarily to the individual citizen of Alaska with emphasis on the preparation of tax returns, tax planning, and the analysis of selected tax problems. (Prerequisite: Acc. 101 or 201.)

Acc. 252 3 Credits Fall
Introduction to Cost Accounting (3+0)

An introductory course in cost accounting for manufacturing operations with thorough treatment of job order cost accounting and process cost accounting. (Prerequisite: Acc. 101 or 201.)

Acc. 311 3 Credits Fall
Acc. 312 3 Credits Spring
Intermediate Accounting (3+0)

A treatment in depth of the balance sheet accounts and procedures for their analysis and correction. Study of working capital and fixed assets will receive special emphasis during Fall

semester. Special attention will be given to long-term liabilities and stockholders' equity during Spring semester. (Prerequisites: Acc. 102. If scheduling permits, students should take Acc. 210 and 252 before Acc. 311 and 312.)

Acc. 315 3 Credits Fall
Analysis of Financial Statements (3+0)
 Interpretation of financial statements and analysis of accounting data for business planning, investment and evaluation purposes. Course not available for credit toward a B.B.A. degree with a major in accounting. (Prerequisite: Acc. 102.)

Acc. 351 3 Credits Spring
Advanced Cost Accounting (3+0)
 A study of analytical processes and cost control procedures for decision making and policy implementation in manufacturing businesses. (Prerequisite: Acc. 252.)

Acc. 401 3 Credits Fall
 Acc. 402 3 Credits Spring
Advanced Accounting (3+0)
 Fall Semester: A thorough study of the accounting for partnerships, installment sales and parent-subsidiary relationships. Spring semester: A thorough study of the accounting for fiduciaries, governments and a brief treatment of applied actuarial science. (Prerequisites: Acc. 102. If scheduling permits, the student should take Acc. 210, 252, 312 before 401 and 402.)

Acc. 403 3 Credits Spring
Advanced Income Taxes (3+0)
 A study of federal and state income taxes relating primarily to partnerships, trusts and corporations with emphasis on the preparation of tax returns, tax planning and selected tax problems. Also, social security taxes, sales taxes, gift, and estate taxes. (Prerequisite: Acc. 210.)

Acc. 452 3 Credits Fall
Auditing (3+0)
 A study of the procedures for verification of financial data and the professional standards applicable to the auditors examination of financial statements and his expression of opinion relative to them. (Prerequisites: Acc. 301 and 302.)

Acc. 454 3 Credits Spring
Accounting Internship (3+0)
 Work experience in an approved position with supervision and training in various phases of

accounting. (Prerequisites: advanced standing as an accounting major and permission of the head of the department.)

Acc. 462 0 Credit Fall-Spring
C.P.A. Review
 Preparation for the Uniform Certified Public Accountant Examination. (Prerequisites: advanced standing in accounting and permission of the head of the department.)

Acc. 493 Credits Arr.
 Acc. 494 Credits Arr.
Special Studies in Accounting

AGRICULTURAL SCIENCE

Ag. 301 3 Credits Fall
Agricultural Prices (3+0)
 Analysis and interpretation of factors affecting agricultural prices; study of price movements; price policy. (Prerequisites: Econ. 121, 122. Offered as demand warrants.)

Ag. 310 3 Credits Spring
Animal Husbandry (2+3)
 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 3 Credits Spring
Horticulture (2+3)
 Survey; principles of propagation, culture and use; soil, light, and water requirements; planting and harvesting; insect, weed, and disease control. (Prerequisites: Biol. 105, 239. Offered as demand warrants.)

Ag. 404 3 Credits Spring
Agricultural Marketing (3+0)
 Principles and practices of agricultural marketing; prices, and costs; case studies. (Prerequisite: Econ. 121. Offered as demand warrants.)

Ag. 491 Credits Arr. Fall
 Ag. 492 Credits Arr. Spring
Seminar

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 Credits Arr. Fall
 Ag. 494 Credits Arr. Spring
 Special Topics

Various subjects studied principally through directed reading and supervised projects. (Offered as demand warrants.)

ANTHROPOLOGY

Anth. 101 3 Credits Fall
 The Study of Man (3+0)
 Introduction to anthropology, including the physical and cultural aspects of man.

Anth. 202 3 Credits Spring
 Cultural Anthropology (3+0)
 Basic theories and current concepts of cultural anthropology regarding the social, political, and aesthetic life of primitive societies.

Anth. 203 3 Credits Fall
 World Ethnography (3+0)
 A descriptive study of peoples of the world: Europe, Asia, and Africa.

Anth. 204 3 Credits Spring
 World Ethnography (3+0)
 A descriptive study of peoples of the world: the New World and the Pacific.

Anth. 205 3 Credits Fall
 Physical Anthropology (3+0)
 An introductory course including the behavior, genetics, classification, and evolution of man and the other primates, as well as the distribution, morphological and physiological adaptations of modern human populations. (Prerequisite: Biol. 105.)

Anth. 214 4 Credits Fall
 Archaeology (3+3)
 The history of archaeology and a study of its methods. (Prerequisite: Anth. 101.)

Anth. 303 3 Credits Spring
 Culture History (3+0)
 The inventions of man and the spread of civilization in the Old and New World. (Prerequisites: Anth. 101 or 203 or 204, or permission of the instructor.)

Anth. 304 3 Credits Fall-Spring
 Africa (3+0)
 Peoples and cultures of Africa. (Prerequisite: Anth. 101.)

Anth. 306 3 Credits Spring
 Oceania (3+0)
 Ethnic groups and cultures of Indonesia, Micronesia, Melanesia, Polynesia, and Australia. (Prerequisite: Anth. 101.)

Anth. 312 3 Credits Fall-Spring
 North American Archaeology (3+0)
 Prehistoric cultures north of Mexico. Archaeological methods peculiar to America and problems related to the prehistory of the Arctic Regions. (Prerequisite: Anth. 214.)

Anth. 326 3 Credits Spring
 Arctic Ethnology (3+0)
 Ethnic groups and cultures of the circumpolar area. (Prerequisites: Anth. 101 or 203 or 204.)

Anth. 328 3 Credits Spring
 Arctic Archaeology (2+3)
 Problems of the prehistory of the Arctic. (Prerequisite: Anth. 214.)

Anth. 329 3 Credits Fall
 Peoples of Central and Northern Asia (3+0)
 Native peoples of Siberia and adjoining regions. (Prerequisite: Anth. 101.)

Anth. 334 3 Credits Spring
 Survey of North American Physical Anthropology (2+2)
 Native North Americans: early migrations, demography, diets, microevolution, health, disease, and cultural practices—all as revealed by studies of the prehistoric and protohistoric skeletal remains, and by the genetics and morphology of living tribes. The value of integrating biological, ethnographical, and archaeological data is emphasized. (Prerequisite: Anth. 205. Recommended: Anth. 204 or 335. Offered alternate years.)

Anth. 335 3 Credits Fall
 North American Ethnology (3+0)
 Tribal life of American Indians north of Mexico. (Prerequisites: Anth. 101 or 203 or 204.)

- Anth. 336 3 Credits Spring**
Ethnology of Central and South America (3+0)
 Racial distribution, material, and social cultures of peoples of Central and South America. (Prerequisite: Anth. 101.)
- Anth. 338 3 Credits Spring**
Culture Patterns of Japan (3+0)
 A study of the social and cultural institutions of Japan and their development from archaeological beginnings to modern times. Emphasis on social change and cultural continuity. (Prerequisite: Anth. 101 or 202 or permission of the instructor.)
- Anth. 342 3 Credits Spring**
Anthropology of the Natives of Alaska (3+0)
 Indians and Eskimos of Alaska. Social organization, social customs, and problems of acculturation. Primarily for students who expect to teach in Alaska. (Prerequisites: Anth. 101, Hist. 341 or junior standing.)
- Anth. 401 4 Credits Fall**
Primate and Human Evolution (3+3)
 The fossils—their morphology, inferred functional and ecological relationships, geochronologic and geochronometric placements. Current taxonomic and phylogenetic assessments, theories of evolutionary processes, and the role of culture in hominid evolution are also major concerns. Contributions of biochemistry and chromosomal studies to an understanding of primate evolution are also considered. (Prerequisite: Anth. 205 or Biol. 208 or permission of the instructor.)
- Anth. 404 4 Credits Spring**
Primate and Human Variations (3+3)
 Primatology, including systematics, behavior, ecology, and inter- and intrapopulation genetic and morphological variations. Human adaptations to heat, cold, high altitude and changing nutritional and disease patterns. (Prerequisite: Anth. 205, Biol. 302, or permission of the instructor. Offered alternate years.)
- Anth. 406 4 Credits Spring**
Primate Anatomy (2+6)
 Each student gains a first hand knowledge of the interrelations and functional significance of the structures of the primate body. The major work of the course consists of dissection of a specified primate and a study of the dentition and osteology. The total anatomical picture is related to the evolution and present ecology of primates. (Prerequisite: Anth. 205, Biol. 105, 201, or 217 and permission of the instructor. Offered alternate years or as demand warrants.)
- Anth. 423 3 Credits Fall**
Social Structure (3+0)
 The social systems of native peoples. (Prerequisites: Anth. 101 or 203 or 204 and junior standing.)
- Anth. 424 3 Credits Spring**
Primitive Religion (3+0)
 Descriptive and comparative study of religious belief in native societies.
- Anth. 425 3 Credits Spring**
Primitive Arts (3+0)
 The visual, literary, and musical arts of native people. (Prerequisites: Anth. 101 and junior standing.)
- Anth. 427 3 Credits Fall**
Contemporary Problems (3+0)
 Analysis of the contemporary problems of the native populations, emphasizing the peoples of Alaska. (Prerequisite: permission of the instructor.)
- Anth. 428 3 Credits Spring**
Psychological Anthropology (3+0)
 The relationship between culture and personal behavior patterns. (Prerequisites: Anth. 202, Psy. 101 and junior standing.)
- Anth. 429 3 Credits Fall**
Language in Culture (3+0)
 The study of language in its relation to culture. (Prerequisites: Anth. 202 and junior standing.)
- Anth. 430 3 Credits Spring**
Anthropological Field Methods (3+0)
 Lectures to prepare the student for field work and inform him of recently developed techniques of collecting field data. (Prerequisites: junior standing and permission of the instructor. Offered as demand warrants.)

Anth. 491 Credits Arr. As demand warrants
 Anth. 492 Credits Arr. As demand warrants
 Seminar
 Topics in anthropology.

Anth. 493 Credits Arr. Fall
 Anth. 494 Credits Arr. Spring
 Special Topics
 Various subjects studied in special fields on anthropology. (Prerequisite: senior standing or permission of the instructor.)

Anth. 495 Credits Arr. Fall
 Anth. 496 Credits Arr. Spring
 Research
 Supervised research in the fields of anthropology represented in the department program. (Prerequisite: permission of the instructor.)

Anth. 497 Credits Arr.
 Anth. 498 Credits Arr.
 Thesis or Project
 Advanced students who have shown special aptitude for individual study or research may elect thesis or project work. (Prerequisite: permission of the head of the department.)

Anth. 601 3 Credits Fall
 History of Anthropology (3+0)
 A chronological study of the development of the science of anthropology, stressing the leaders in the field and the theories developed.

Anth. 610 3 Credits Fall
 Human Ecology (3+0)
 The adaptation of man to his environment, both natural and social. The course concerns itself with the total aspect of a society in its internal group relationship, as well as in the natural environment on which its economy is based.

Anth. 620 3 Credits Spring
 Physical Anthropology of North America (2+2)
 Review of pertinent background material. Individual intensive research on a group, tracing biological history, relationships with other living populations, prehistoric migrations, demography, reaction to foreign diseases, micro-evolutionary derivations, and other features. (Prerequisite: Anth. 204 and 205 or 335.)

Anth. 630 Credits Arr. Spring
 Anthropological Field Methods
 An opportunity for the graduate student to learn the techniques of field work and practice them.

Anth. 691 Credits Arr. Fall
 Anth. 692 Credits Arr. Spring
 Seminar
 Topics include physical and social anthropology, comparative archaeology, ethnological theory. (Admission by arrangement.)

Anth. 693 Credits Arr. Fall
 Anth. 694 Credits Arr. Spring
 Special Topics
 Various subjects studied, principally by directed study, discussion, and research. (Admission by arrangement.)

Anth. 695 Credits Arr. As demand warrants
 Anth. 696 Credits Arr. As demand warrants
 Research
 Supervised research. Credit to be arranged. (Prerequisites: graduate standing and permission of the instructor. Can be repeated.)

Anth. 697 Credits Arr. Fall
 Anth. 698 Credits Arr. Spring
 Thesis
 Offered as demand warrants.

APPLIED STATISTICS

A.S. 301 3 Credits Fall-Spring
 Elementary Probability and Statistics (2+3)
 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 and Junior Standing or consent of instructor.)

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A.S. 401 3 Credits Fall Analysis of Linearized Models (2+3)

Analysis by methods of least squares of general linearized models, including those appropriate to various designs, including completely random, randomized complete block, incomplete block and latin square, and those for the analysis of variance and analysis of covariance. Matrix algebra appropriate to least squares. (Prerequisites: A.S. 301.)

A.S. 402 3 Credits Spring Scientific Sampling (2+3)

Sampling methods, including simple random, stratified and systematic; estimation procedures, including ratio and regression method; special area and point sampling procedures; optimum allocation. (Prerequisites: A.S. 301.)

A.S. 493 Credits Arranged Fall A.S. 494 Credits Arranged Spring Special Topics

Various topics studied. Admission by arrangement.

A.S. 602 3 Credits Spring Experimental Design (3+0)

Constructing and analyzing designs for experimental investigations; completely randomized, randomized block and Latin-square designs, split-plot design, incomplete block design, simple and partially compounded factorial designs, lattice and cubic lattice designs, treatment of missing data, comparison of designs. (Prerequisites: A.S. 401 or consent of instructor. Offered as demand warrants.)

A.S. 693 Credits Arranged Fall A.S. 694 Credits Arranged Spring Special Topics

Various topics studied. Admission by arrangement.

ART

Art 53 2 Credits As demand warrants Freehand Shop Sketching (1+3)

Perspective sketching for rapid illustrations of structures, joints and machines. *Offered only at ACC.*

Art 55 2 Credits Fall Art 56 2 Credits Spring

Elementary Drawing (0+4)
Line Drawing, shading, layout, and design.

Art 57 2 Credits Fall Art 58 2 Credits Spring

Elementary Printmaking (0+4)
Blockprinting, etching, and engraving.

Art 59 3 Credits Fall Art 60 3 Credits Spring

Elementary Metalcraft (0+4)
Metalcraft techniques. Designing, annealing, and soldering.

Art 61 3 Credits Fall Art 62 3 Credits Spring

Elementary Sculpture (0+6)
Clay modeling, stone carving, and woodcarving.

Art 63 3 Credits Fall Art 64 3 Credits Spring

Elementary Oil Painting (0+6)
Characteristics of pigments, preparation of canvas, layout, and design painting.

Art 65 3 Credits Fall Art 66 3 Credits Spring

Elementary History of World Art (3+0)
Artistic endeavors throughout the history of Western man.

Art 101 3 Credits Fall Art 102 3 Credits Spring

Beginning Ceramics (2+4)
An introduction to ceramics as a medium for expression. Foundation experiences in clay, glazes, and plaster with lesser emphasis on enamels, concrete, and glass. Terminal course for non-ceramic majors, as well as a base for subsequent courses.

Art 105 2 Credits Fall Art 106 2 Credits Spring

Freehand Drawing (0+4)
Pictorial design and composition, various contemporary forms of expressions, life drawing, landscape drawing, using varied techniques and media.

Art 107 2 Credits As demand warrants Art 108 2 Credits As demand warrants

Watercolor (1+3)
Basic investigation of the materials of watercolor and their use in expressing the

student's ideas and problems in the techniques of watercolor.

Art 161 2 Credits Fall
Art 162 2 Credits Spring

Design and Color Theory (1+3)
Creative designing and rendering. Emphasis on mass-space relationships and composition, value transitions and hues, colorwheel, color, and intensity movements.

Art 201 3 Credits Fall
Art 202 3 Credits Spring

Intermediate Ceramics (2+4)
A continuation of Basic Ceramics with an emphasis on the potter's wheel and glaze calculations; plaster, as it relates to pottery; an introduction to enameling as a medium for expression; cold glass techniques; basic concrete experiences. (Prerequisite: Art 101-102 or permission of the instructor.)

Art 204 3 Credits As demand warrants
New Art Media and Techniques for the Teacher (2+3)

Techniques of combining art with any subject matter to enhance and enrich these courses. Studio course combined with art history. *Offered only at ACC.*

Art 205 2 Credits Fall
Art 206 2 Credits Spring

Life Drawing and Composition
Problems in drawing from life, exploring possibilities in pictorial design, and composition, still life and anatomy. (Prerequisite: Art 106 or permission of the instructor.)

Art 207 2 Credits Fall
Art 208 2 Credits Spring

Beginning Printmaking (0+4)
Various intaglio and relief printing media, engraving, etching, woodcut, and other graphic media (Prerequisite: Art 106 or permission of the instructor.)

Art 209 3 Credits Fall
Art 210 3 Credits Spring

Beginning Metalcraft (0+4)
Material processes and techniques for silver jewelry and silversmithing. (Prerequisite: Art 161 or permission of the instructor.)

Art 211 3 Credits Fall
Art 212 3 Credits Spring

Beginning Sculpture (0+6)
Basic casting techniques, creative studies in clay, wood, stone and metal sculpture. Emphasis on mastery of techniques and material processes.

Art 213 3 Credits Fall
Art 214 3 Credits Spring

Beginning Oil Painting (0+6)
Basic investigation of materials and their use in expressing the students' ideas. (Prerequisites: Art 106, 162 or permission of the instructor.)

Art 215 2 Credits As demand warrants
Weaving (0+6)
(Same as H.E. 215.)

The study of various weaving techniques, including the traditional loom weaving, different kinds of primitive weaving, (backstrap loom, Inko loom, Hungarian loom, etc.), tapestry weaving, macrame and spinning and dyeing yarns. The emphasis will be on individual creativity and experimentation within these techniques.

Art 261 3 Credits Fall
Art 262 3 Credits Spring

History of World Art (3+0)
Origins of art and its progressive development from the paleolithic era to the present; emphasis on change and development. (Prerequisite: sophomore standing. Term paper required each semester.)

Art 301 3 Credits Fall
Art 302 3 Credits Spring

Advanced Ceramics (2+4)
Advanced wheel work; design of large scale ceramic murals for incorporation into architecture. Study of the practical application of ceramics in the commercial field. Advanced body and glaze calculation. (Prerequisite: Art 201-202 or permission.)

Art 305 2 Credits Fall
Art 306 2 Credits Spring

Advanced Drawing and Anatomy (0+4)
Creative approach, including a comprehensive study of functional human anatomy, with the human figure as an art motif. (Prerequisite: Art 206 or permission of the instructor.)

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Art 307 2 Credits Fall
Art 308 2 Credits Spring

Intermediate Printmaking (0+4)

Additional study and experimentation in intaglio, relief, and planographic printing techniques, including lithography, serigraphy, and color printing. (Prerequisite: Art 208 or permission of the instructor.)

Art 309 3 Credits Fall
Art 310 3 Credits Spring

Intermediate Metalcraft (0+4)

Material processes and techniques for silver jewelry and silversmithing; creating problems in artistic design. (Prerequisite: Art 210 or permission of the instructor.)

Art 311 3 Credits Fall
Art 312 3 Credits Spring

Intermediate Sculpture (0+6)

Creative studies in welding, plaster casting, concrete casting, sand-casting, clay modeling, wood carving, and stone carving. (Prerequisite: Art 212 or permission of the instructor.)

Art 313 2 Credits Fall
Art 314 2 Credits Spring

Intermediate Oil Painting (0+4)

Creating pictorial problems in oil painting techniques, still life, composition, and figure painting. (Prerequisite: Art 214 or permission of the instructor.)

Art 407 2 Credits Fall
Art 408 2 Credits Spring

Advanced Printmaking (0+4)

Advanced study in all printing media. (Prerequisite: Art 308 or permission of the instructor.)

Art 409 3 Credits Fall
Art 410 3 Credits Spring

Advanced Metalcraft (0+4)

Continued investigation and experimentation of intermediate metalcraft. (Prerequisite: Art 310 or permission of the instructor.)

Art 411 3 Credits Fall
Art 412 3 Credits Spring

Advanced Sculpture (0+6)

Styrofoam burn-out, aluminum, bronze casting, steel welding, repousse sculpture, plastics, inlay, and architectural sculpture. (Prerequisite: Art 312 or permission of the instructor.)

Art 413 2 Credits Fall
Art 414 2 Credits Spring

Advanced Oil Painting (0+4)

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 of the instructor.)

Art 419 3 Credits As demand warrants
History of Northern
Renaissance Art (3+0)

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 Credits Arr. Fall
Art 494 Credits Arr. Spring

Special Topics

Various subjects in art. (Admission by arrangement.)

Art 691 Credits Arr. As demand warrants
Art 692 Credits Arr. As demand warrants
Art Seminar

Art 693 Credits Arr. Fall
Art 694 Credits Arr. Spring

Special Topics

Various subjects, principally by directed study, discussion, and research.

Art 695 Credits Arr. Fall
Art 696 Credits Arr. Spring
Research

Art 697 Credits Arr. Fall
Art 698 Credits Arr. Spring
Thesis

AVIATION TECHNOLOGY

A.T. 100 4 Credits
Private Pilot Ground School (3+3)

Preparation for the Federal Aviation Administration private pilot examination. Includes air traffic control, principles of flight, engine operation, weather, navigation, and other related subjects. *Offered only at ACC.*

A.T. 102 3 Credits
Introduction to Aviation I (3+0)

A.T. 104 3 Credits
Introduction to Aviation II (3+0)

The development and present status of aviation. Social, political, economic and cultural spectrum of aerospace. Characteristics, classification, and inter-relations of principal segments of the aviation industry. Emphasis on air transportation, federal legislation, and areas where aerospace age careers exist and will be developing. *Offered only at ACC.*

A.T. 106 3 Credits
Aviation Laws and Regulations (3+0)

Organization authority, responsibility, and functions of the Department of Transportation, the Federal Aviation Administration, and the Civil Aeronautics Board. Particular emphasis on the Federal Aviation Regulations and their use. Survey of official flight information publications. (Prerequisite: A.T. 104 or permission.) *Offered only at ACC.*

A.T. 108 3 Credits As demand warrants
Aviation Safety (3+0)

An introduction to safety engineering. This course will survey the field of aviation safety with a view toward identifying the primary causes of aviation accidents. Safety programs will be developed and evaluated. Role of the National Transportation Safety Board and other related agencies. Future concepts in aviation safety. *Offered only at ACC.*

A.T. 110 3 Credits As demand warrants
Survival, Search and Rescue (3+0)

An extension of A.T. 108 dealing with the situations that develop from lost or downed aircraft. Principles of survival and a survey of survival in all types of climates. Emphasis on survival in arctic environment. Organization for search and rescue with emphasis on systems and operational methods used in Alaska. (Prerequisite: A.T. 108 or permission.) *Offered only at ACC.*

A.T. 112 3 Credits As demand warrants
Aerophysics (2+2)

A demonstration physics course with emphasis on the physical phenomenon directly applicable to flight. Physical units, work and power, vectors, relative motion, moments, energy, thermodynamics, fluid flow and aerodynamics. (Prerequisites: One year high school algebra and permission of instructor.) *Offered only at ACC.*

A.T. 114 3 Credits
Elements of Weather

Definitions of weather elements; methods of measurement; composition of the atmosphere; description of atmospheric process leading to rain, fog, snow, hail, hurricanes, tornadoes, thunderstorms; weather fronts and pressure systems and their movement; general circulation of the atmosphere and its source; wind and secondary circulation; weather forecasts — how they are made and how they can be used; weather satellites — their current and projected use. *Offered only at ACC.*

A.T. 116 3 Credits
Aviation Weather

Weather as it affects aircraft operators. Types, sources, and limits of aviation weather forecasts. Canadian and U.S. weather services are included with emphasis on Alaska and Western Canada. *Offered only at ACC.*

A.T. 118 3 Credits
Aviation Navigation (3+0)

The earth's surface and mapping, aeronautical charts, fundamentals of navigation, navigational calculations. Theory and operation of airborne navigational equipment. Future trends in navigation. (Prerequisite: A.T. 100) *Offered only at ACC.*

A.T. 120 3 Credits
Principles of Air Traffic Control I (3+0)

A.T. 122 3 Credits
Principles of Air Traffic Control II (3+0)

History of the Federal Aviation Administration. Organization for Air Traffic Control and the role it plays in the aviation community. Theory of traffic control and methods used in its implementation. Authority, responsibility, and methods used by air traffic controllers. Military air traffic control procedures. The future of air traffic control. *Offered only at ACC.*

A.T. 124 3 Credits
The Radar Environment (3+0)

Fundamentals of radar and transponder operation, capabilities and limitations, pilot displays, ATC displays, navigation by radar, radar approaches, military applications and security, emergency situations, future developments. Orientation at ARTCC and approach control. (Prerequisite: A.T. 120.) *Offered only at ACC.*

A.T. 126 3 Credits**Air Traffic Control Regulations (3+0)**

Detailed analysis of the Federal Aviation Regulations pertaining to air traffic control. Current practices for implementing and enforcing these regulations will be surveyed. *Offered only at ACC.*

A.T. 128 3 Credits**ATC Facilities & Operations I (3+0)****A.T. 130 3 Credits****ATC Facilities & Operations II (3+0)**

Organization of the Federal Aviation Administration for Air Traffic Control. Detailed analysis of the facilities and operations used by the Air Traffic Service in operating the national airway system. Air route traffic control centers, towers, flight service stations, coordination with other agencies; military operations. (Prerequisite: A.T. 122.) *Offered only at ACC.*

A.T. 132 1-6 Credits**Air Traffic Control Intern Program**

Students enrolled in the Air Traffic Control course may be afforded the opportunity to function as an intern for a period of indoctrination and work practice at an air traffic control facility. (Prerequisites: A.T. 122 and permission of instructor.) *Offered only at ACC.*

A.T. 134 3 Credits**Principles of Aviation Administration I (3+0)****A.T. 136 3 Credits****Principles of Aviation Administration II (3+0)**

An introduction to business administration utilizing airlines and air carriers as the vehicles of instruction. Personal finance; business law; real estate; financial management; effect of government regulation; securities; social responsibilities of airlines and air carriers. Future trends in aviation administration. *Offered only at ACC.*

A.T. 138 3 Credits**Management—Airline and Air Carrier (3+0)**

An introduction to management using an airline and an air carrier as the vehicles of instruction. Authority, responsibility, leadership, structuring an organization, organization charts, job descriptions, measuring

productivity. Discussions of management problems common to aviation. (Prerequisite: A.T. 134 or permission.) *Offered only at ACC.*

A.T. 140 3 Credits**Management—Airport (3+0)**

Major functions of airport management; organization, zoning, adequacy, financing, ownership, revenues and expenses, construction, expansion, evaluation techniques, safety, relations with local, state, and federal agencies. The social-economic effect of airports on the community. Future design and trends in airport operations. (Prerequisite: A.T. 138 or permission.) *Offered only at ACC.*

A.T. 142 3 Credits**Management—Fixed Base Operation (3+0)**

Functions of a fixed base operator; organization, adequacy, financing, ownership, revenues and expenses, construction, expansion, safety, relations with local business firms, relations with federal, state and local agencies. Analysis of highly successful fixed base operations. Future trends. *Offered only at ACC.*

A.T. 144 3 Credits**Airline Marketing (3+0)**

The function of marketing in airline operation; market research, demand analysis, advertising and promotion, sales, traffic, and the theory of price determination; effect of Federal regulations. Dissemination of information and the media involved. Attitudes and their effect on marketing. Survey of current marketing practices and cooperative design of an airline marketing program. (Prerequisite: A.T. 136 or permission.) *Offered only at ACC.*

A.T. 146 3 Credits**Aviation Industrial Relations (3+0)**

Personnel practice in the aviation industry; analysis of labor-management problems; methods and administrations of recruiting, selecting, training and compensating employees; labor laws and the applications. (Prerequisite: A.T. 138.) *Offered only at ACC.*

A.T. 148 2 Credits**Private Flying (0+4)**

Flight instruction provided by a pilot school approved by the college designed to qualify students for a private pilot certificate. Training will be in accordance with current Federal

Aviation Administration flight training directives. Approximately 40 hours of flying. Course completion requires the awarding of a Private Pilot Certificate from a Federal Aviation Administration Flight Inspector. (Prerequisite: A.T. 100 or concurrent enrollment.) *Offered only at ACC.*

A.T. 150 4 Credits

Commercial Ground Instruction (3+3)

Advanced work in the topics discussed in A.T. 100 plus: alcohol, drugs and flight effects; aircraft ignition systems; basic radar and transponder; oxygen altitude and the body; oxygen systems; high performance aircraft; emergency procedures; icing; maneuvers. Course completion requires passing the Federal Aviation Administration Commercial Pilot Written Examination. (Prerequisite: A.T. 100 or permission.) *Offered only at ACC.*

A.T. 152 3 Credits

Commercial Flying (0+9)

Flight instruction provided by a pilot school approved by the college designed to qualify private pilots for a Commercial Pilot Certificate. Training will be in accordance with current Federal Aviation Administration flight training directives. Approximately 120 hours of flying. Course completion requires the awarding of a Commercial Pilot Certificate from a Federal Aviation Administration Flight Inspector. (Prerequisites: A.T. 148 and A.T. 150 or concurrent enrollment.) *Offered only at ACC.*

A.T. 154 4 Credits

Instrument Ground School (3+3)

Instrument weather; IFR clearance shorthand; IFR flight charts; IFR planning and VOR flight; IFR regulations and procedures; instrument approaches; instruments and systems; physiology of flight; the Federal airways system; IFR publications; simulated flights. Course completion requires passing the Federal Aviation Administration Instrument Pilot Written Examination. (Prerequisite: A.T. 105 or permission.) *Offered only at ACC.*

A.T. 156 3 Credits

Instrument Flying (1+3)

Flight instruction provided by a pilot school approved by the college designed to qualify commercial pilots for an instrument rating.

Training will be in accordance with current Federal Aviation Administration flight training directives. Approximately 40 hours of flying. Course completion requires the awarding of an instrument rating by a Federal Aviation Administration flight inspector. (Prerequisites: A.T. 152 and A.T. 154 or concurrent enrollment.) *Offered only at ACC.*

A.T. 158 3 Credits

CFI Ground Instruction (3+3)

Certified flight instructor training consisting of: aerodynamics; aeromedical aspects of flight instruction; the integrated method of flight instruction; the flight training syllabus; flight instructor responsibilities; flight training maneuvers and procedures; flight training publication; group projects and practice instructing. Course completion requires passing the Federal Aviation Administration Flight Instructor Airplane Written Examination. (Prerequisite: A.T. 150.) *Offered only at ACC.*

A.T. 160 2 Credits

CFI Flying (1+2)

Flight instruction provided by a pilot school approved by the college designed to qualify commercial pilots for certified flight instructor rating. Training will be in accordance with current Federal Aviation Administration flight training directives. Approximately 30 hours of flying. Course completion requires the awarding of a Certified flight instructor rating from a Federal Aviation Administration flight inspector. (Prerequisites: A.T. 152 and A.T. 158.) *Offered only at ACC.*

A.T. 162 2 Credits

Multi-Engine Ground Instruction (2+0)

Classroom presentations and directed study designed to prepare a commercial pilot for the oral examination phase of his Federal Aviation Administration Multi-Engine Rating Examination. (Prerequisite: A.T. 152.) *Offered only at ACC.*

A.T. 164 1 Credit

Multi-Engine Flying (1+1)

Flight instruction designed to prepare the commercial pilot for a Federal Aviation Administration multi-engine rating. Flight instruction provided by a pilot school approved by the college. Training will be in accordance with current Federal Aviation Administration flight

training directives. Approximately 10 hours of flying. Course completion requires the awarding of a multi-engine rating from a Federal Aviation Administration flight inspector. (Prerequisites: A.T. 152 and A.T. 162 or concurrent enrollment.) *Offered only at ACC.*

A.T. 166 4 Credits
Flight Simulator Operation I (3+3)

A.T. 168 4 Credits
Flight Simulator Operation II (3+3)

This course will prepare advanced aviation students to be qualified flight simulator operators. Half the credit will be for classroom work and the other half will be given for practical experience on the college's flight simulators. (Prerequisite: permission.) *Offered only at ACC.*

A.T. 170 2 Credits
Basic Electricity (3+0)

Measure and capacitance and inductance. Calculate and measure electrical power. Measure voltage, current, resistance, continuity, and leakage. Determine the relationship of voltage, current, and resistance in electrical circuits. Read and interpret electrical circuit diagrams. Inspection and servicing batteries. *Offered only at ACC.*

A.T. 172 2 Credits
Aircraft Drawings (3+0)

Use drawings, symbols, and schematic diagrams. Draw sketches of repairs and alterations. Use blueprint information. Use graphs and charts. *Offered only at ACC.*

A.T. 174 1 Credit
Weight and Balance (2+0)

Weigh aircraft. Perform complete weight-and-balance check and record data. *Offered only at ACC.*

A.T. 176 1 Credit
Fluid Lines and Fittings (2+0)

Fabrication and installation of rigid and flexible fluid lines and fittings. *Offered only at ACC.*

A.T. 178 2 Credits
Materials and Processes (3+0)

Identification and selection of appropriate nondestructive testing methods. Perform penetrant chemical etching, and magnetic particle inspections. Perform basic heat-treating processes. Identification and selection of

aircraft hardware and materials. Inspection and checking welds. Perform precision measurements. *Offered only at ACC.*

A.T. 180 1 Credit
Ground Operation and Servicing (2+0)

Start, ground operate, move, service, and secure aircraft. Identification and selection of fuels. *Offered only at ACC.*

A.T. 182 1 Credit
Cleaning and Corrosion Control (2+0)

Identification and selection of cleaning materials. Perform aircraft cleaning and corrosion control. *Offered only at ACC.*

A.T. 184 1 Credit
Maintenance Forms and Records (2+0)

Write descriptions of aircraft condition and work performed. Complete required maintenance forms, records, and inspection reports. *Offered only at ACC.*

A.T. 186 3 Credits
Basic Physics (3+1)

Use the principles of simple machines; sound, fluid and heat dynamics. *Offered only at ACC.*

A.T. 188 1 Credit
Maintenance Publications (2+0)

Select and use FAA and manufacturer's aircraft maintenance specifications, data sheets, manuals, and publications, and related Federal Aviation regulations. Reading of technical data. *Offered only at ACC.*

A.T. 190 1 Credit
Mechanic Privileges and Limitations (2+0)

Exercise mechanic privileges within the limitations prescribed by Part 65 of this chapter. *Offered only at ACC.*

A.T. 192 1 Credit
Wood Structures (0+3)

Service and repair wood structures. Identification of wood defects. Inspection of wood structures. *Offered only at ACC.*

A.T. 194 1 Credit
Aircraft Covering (0+3)

Selection and application of fabric and fiberglass covering materials. Inspect, test, and repair fabric and fiberglass. *Offered only at ACC.*

A.T. 196 1 Credit**Aircraft Finishes (0+3)**

Apply trim, letters, and touchup paint. Identification and selection of aircraft finishing materials. Apply paint and dope. Inspection of finishes and identification of defects. *Offered only at ACC.*

A.T. 198 1 Credit**Sheet Metal Structures (0+3)**

Install special rivets and fasteners. Inspect bonded structures. Inspect and repair plastics, honeycomb, and laminated structures. Inspect, check, service, and repair windows, doors and interior furnishings. Inspect and repair sheet-metal structures. Install conventional rivets. Hand form, lay out, and bend sheet metal. *Offered only at ACC.*

A.T. 200 1 Credit**Welding (0+3)**

Weld magnesium and titanium. Solder stainless steel. Fabricate tubular structures. Solder, braze, gas-weld, and arc-weld steel. Weld aluminum and stainless steel. *Offered only at ACC.*

A.T. 202 1 Credit**Assembly and Rigging (0+3)**

Rig rotary-wing aircraft. Rig fixed-wing aircraft. Check alignment of structures. Assemble aircraft. Balance and rig movable surfaces. Jack aircraft. *Offered only at ACC.*

A.T. 204 1 Credit**Airframe Inspection (0+3)**

Perform airframe conformity and airworthiness inspections. *Offered only at ACC.*

A.T. 206 1 Credit**Aircraft Landing Gear Systems (0+3)**

Inspect, check, service, and repair landing gear, retraction systems, shock struts, brakes, wheels, tires, and steering systems. *Offered only at ACC.*

A.T. 208 1 Credit**Hydraulic and Pneumatic Power Systems (0+3)**

Repair hydraulic and pneumatic power systems components. Identification and selection of hydraulic fluids. Inspect, check, service, troubleshoot, and repair hydraulic and pneumatic power systems. *Offered only at ACC.*

A.T. 210 1 Credit**Cabin Atmosphere Control Systems (0+3)**

Repair heating, cooling, air-conditioning, pressurization, and oxygen system components. Inspect, check, troubleshoot, service, and repair heating, cooling, air-conditioning, and pressurization systems. Inspect, check, troubleshoot, service and repair oxygen systems. *Offered only at ACC.*

A.T. 212 1 Credit**Aircraft Instrument Systems (0+3)**

Inspect, check, service, troubleshoot and repair heating, speed, altitude, time, altitude temperature, pressure and position indicating systems. Install instruments. *Offered only at ACC.*

A.T. 214 1 Credit**Communication and Navigation Systems (0+3)**

Inspect, check, and service auto-pilot and approach control systems. Inspect, check, and service aircraft electronic communication and navigation systems. Inspect and repair antenna and electronic equipment installations. *Offered only at ACC.*

A.T. 216 1 Credit**Aircraft Fuel Systems (0+3)**

Check and service fuel dump systems. Perform fuel management, transfer, and defueling. Inspect, check, and repair pressure fueling systems. Repair aircraft fuel system components. Inspect and repair fluid quantity indicating systems. Troubleshoot, service, and repair fluid pressure and temperature warning systems. Inspect, check, service, troubleshoot, and repair aircraft fuel systems. *Offered only at ACC.*

A.T. 218 1 Credit**Aircraft Electrical Systems (0+3)**

Repair aircraft electrical system components. Install, check, and service airframe electrical wiring, controls, switches, indicators, and protective devices. Inspect, check, troubleshoot, service and repair alternating current and direct current electrical systems. *Offered only at ACC.*

A.T. 220 1 Credit**Position and Warning Systems (0+3)**

Inspect, check, and service speed and takeoff-warning systems, electrical brake

controls, and antiskid systems. Inspect, check, troubleshoot, service, and repair landing gear position indicating and warning systems. *Offered only at ACC.*

A.T. 222 1 Credit
Ice and Rain Control Systems (0+3)
Inspect, check, troubleshoot, service, and repair airframe ice and rain control systems. *Offered only at ACC.*

A.T. 224 1 Credit
Fire Protection Systems (0+3)
Inspect, check, and service smoke and carbon monoxide detection systems. Inspect, check, service, troubleshoot, and repair aircraft fire detection and extinguishing systems. *Offered only at ACC.*

A.T. 226 2 Credits
Reciprocating Engines (0+6)
Inspect and repair 14-cylinder or larger radial engine. Overhaul reciprocating engine. Inspect, check, service, and repair opposed and radial engines and reciprocating engine installations. Install, troubleshoot, and remove reciprocating engines. *Offered only at ACC.*

A.T. 228 2 Credits
Turbine Engines (0+6)
Overhaul turbine engine. Inspect, check, service, and repair turbine engines and turbine engine installations. Install, troubleshoot, and remove turbine engines. *Offered only at ACC.*

A.T. 230 1 Credit
Engine Inspection (0+3)
Perform powerplant conformity and airworthiness inspections. *Offered only at ACC.*

A.T. 232 1 Credit
Engine Instrument Systems (0+3)
Troubleshoot, service, and repair fluid rate-of-flow indicating systems. Inspect, check, service, troubleshoot, and repair engine temperature, pressure, and r.p.m. indicating systems. *Offered only at ACC.*

A.T. 234 1 Credit
Engine Fire Protection Systems (0+3)
Inspect, check, service, troubleshoot, and repair engine fire detection and extinguishing systems. *Offered only at ACC.*

A.T. 236 1 Credit
Engine Electrical Systems (0+3)
Repair engine electrical system components. Install, check, and service engine electrical wiring controls, switches, indicators, and protective devices. *Offered only at ACC.*

A.T. 238 1 Credit
Lubrication Systems (0+3)
Identification and selection of lubricants. Repair engine lubrication system components. Inspect, check, service, troubleshoot, and repair engine lubrication systems. *Offered only at ACC.*

A.T. 240 1 Credit
Ignition Systems (0+3)
Overhaul magneto and ignition harness. Repair engine ignition system components. Inspect, check, service, troubleshoot, and repair reciprocating and turbine engine ignition systems. *Offered only at ACC.*

A.T. 242 1 Credit
Fuel Metering Systems (0+3)
Inspect, check, and service water injection systems. Overhaul carburetor. Repair engine fuel metering system components. *Offered only at ACC.*

A.T. 244 1 Credit
Engine Fuel Systems (0+3)
Repair engine fuel system components. Inspect, check, service, troubleshoot, and repair engine fuel systems. *Offered only at ACC.*

A.T. 246 1 Credit
Induction Systems (0+3)
Inspect, check, troubleshoot, service, and repair engine ice and rain control systems. Inspect, check, service, and repair heat exchangers and superchargers. Inspect, check, service, and repair carburetor air intake and induction manifolds. *Offered only at ACC.*

A.T. 248 1 Credit
Engine Cooling Systems (0+3)
Repair engine cooling system components. Inspect, check, troubleshoot, service and repair engine cooling systems. *Offered only at ACC.*

A.T. 250 1 Credit
Engine Exhaust Systems (0+3)
Repair engine exhaust system components. Inspect, check, troubleshoot, service, and repair engine exhaust systems. *Offered only at ACC.*

A.T. 252 1 Credit
Propellers (0+3)

Inspect, check, service, and repair propeller synchronizing and ice control systems. Identification and selection of propeller lubricants. Balance propellers. Repair propeller control system components. Inspect, check, service, and repair fixed-pitch, constant-speed, and feathering propellers, and propeller governing systems. Install, troubleshoot, and remove propellers. *Offered only at ACC.*

BEHAVIORAL SCIENCES

B.S. 101 3 Credits As demand warrants
Field Observation (2+3)

Observation experience within a series of three agencies in which an awareness of intake procedures, services provided, and follow-up will be discussed.

B.S. 102 3 Credits As demand warrants
Introduction to Behavioral Science (3+0)

The science of man as a social animal, his social process, experience perception, and behavior with added emphasis upon motivation, learning, sensation, and personality in an attempt to construct an interaction framework in understanding and predicting human behavior. *Offered only at ACC.*

B.S. 201 3 Credits As demand warrants
Field Practice (2+3)

Practical experience within an agency, under the guidance of field supervisors, collecting and interpreting client information. Ways of relating to clients in a therapeutic manner will be developed in the training experience.

B.S. 251 3 Credits As demand warrants
Research Principles (2+3)

Basic principles of scientific methods, its application to behavioral and social science statistics. The implication of systematic assessment, experimentation and survey methods for empirical conclusions concerning social and behavioral functions and causes.

BIOLOGY

Biol. 101 3 Credits Fall
Biol. 102 3 Credits Spring

Biology and Man (3+0)

A survey of biological principles as applied to the problems of man. A course designed primarily for non-science majors. Fall semester: Human physiology, genetics and evolution. Spring semester: Ecology and an introduction to animal behavior. *Offered only at ACC.*

Biol. 104 4 Credits Fall
Natural History of Alaska (3+3)

Animals, plants, and the major ecosystems of Alaska. (Prerequisite: Permission of instructor)

Biol. 105 4 Credits Fall
Fundamentals of Biology (3+3)

Basic principles of living systems: chemical and structural bases; major metabolic mechanisms; reproduction and development; genetics; evolution, and diversity; environmental relationships; and mechanisms for stability of cells, organisms, and populations. An introductory course open to students in all curricula.

Biol. 201 3 Credits Fall
Elements of Vertebrate Anatomy (2+3)

Anatomy and histology of the vertebrate body with emphasis on human and other mammals. (Prerequisite: Biol. 105.)

Biol. 203 4 Credits Fall
Invertebrate Zoology (3+3)

Structure, function, classification, evolution, and life histories of invertebrate animals. Several all day field trips. (Prerequisites: Biol. 105 with a grade of B or better, or Biol. 105 and sophomore standing.)

Biol. 206 2 Credits Spring
Introduction to Bird Study (1+3)

Natural history and identification of birds. Early morning field trips. No credit allowed if credit received for Biol. 310. (Prerequisites: Biol. 105 with a grade of B or better, or Biol. 105 and sophomore standing, or permission of the instructor. Offered alternate years; next offered 1972.)

COURSE DESCRIPTIONS 201

Biol. 208 3 Credits Spring
Organic Evolution (3+0)

Evidences, mechanisms, and directive forces. (Prerequisite: Biol. 105 with a grade of B or better, or sophomore standing. Offered alternate years; next offered 1972.)

Biol. 210 4 Credits Spring
General Physiology (3+3)

Organism function, including such topics as respiration, digestion, circulation, nerve and muscle function, hormones, and reproduction. (Prerequisites: Biol. 105 with a grade of B or better, or Biol. 105 and sophomore standing; Chem. 105 or Chem. 103 and 104.)

Biol. 217 4 Credits Fall
Comparative Anatomy of Vertebrates (2+6)

Anatomy, phylogeny, and evolution of the vertebrates. (Prerequisites: Biol. 105 with a grade of B or better, or Biol. 105 and sophomore standing.)

Biol. 239 4 Credits Spring
Plant Form and Function (3+3)

Structure, function, ecology, and evolutionary patterns of the major groups of plants. (Prerequisites: Biol. 105 with a grade of B or better, or Biol. 105 and sophomore standing.)

Biol. 302 3 Credits Spring
Genetics (3+0)

Principles of inheritance in plants and animals; the physico-chemical properties of genetic systems. (Prerequisites: Biol. 105 with a grade of B or better, or Biol. 105 and sophomore standing.)

Biol. 303 3 Credits Fall-Spring
Principles of Ecology (3+0)

Relationships between organisms and their environments. Communities, environmental factors affecting plants and animals, population structure, and reaction of organisms. Field trips. (Prerequisites: Biol. 105 with a grade of B or better, or Biol. 105 and sophomore standing.)

Biol. 306 3 Credits Fall
Entomology (2+3)

Natural history and identification of insects and arachnids. Preregistration required to insure preparation of individual insect collection. (Prerequisites: Biol. 105; Biol. 203 recommended.)

Biol. 307 3 Credits Fall
Parasitology (2+3)

Classification, morphology, life history, and ecology of parasites of animals. (Prerequisites: Biol. 105 and permission of instructor.)

Biol. 309 4 Credits Fall
Biol. 310 4 Credits Spring
Biology of the Vertebrates (3+3)

Classification, evolution, morphology, ecology, and distribution of the vertebrates. Field trips, including early morning trips in Biol. 310. (Prerequisites: for Biol. 309, Biol. 105, and a course in anatomy or permission of the instructor. For Biol. 310, 309 or permission of the instructor.)

Biol. 318 4 Credits Spring
Vertebrate Developmental Anatomy (2+6)

Morphogenesis of the vertebrates and introduction to the causal analysis of development. (Prerequisite: Biol. 217.)

Biol. 331 4 Credits Fall
Systematic Botany (2+6)

Identification and classification of vascular plants with emphasis on Alaskan flora; discussion of taxonomic principles and both classical and experimental methods of taxonomic research. Preregistration required to insure preparation of individual plant collections prior to registration. (Prerequisite: Biol. 239, or permission of the instructor.)

Biol. 333 3 Credits Fall
Morphology of the Non-Vascular Plants (2+3)

Comparative study of structure, development, phylogenetic trends, and life histories of the major groups of algae, fungi, and bryophytes. (Prerequisite: Biol. 239. Offered alternate years; next offered 1972.)

Biol. 334 4 Credits Fall
Morphology and Anatomy of Vascular Plants (3+3)

Comparative study of morphology, developmental anatomy, phylogenetic trends, and life histories of the major groups of vascular plants. (Prerequisite: Biol. 239. Offered alternate years; next offered 1971.)

Biol. 341	4 Credits	Fall
Biol. 342	4 Credits	Spring

General Microbiology (2+6)

First Semester: Morphology, physiology and systematics of microorganisms with major emphasis on bacteria. (Prerequisites: Chem. 106, Biol. 105, Biol. 210 or Chem. 321, or permission of the instructor.) Second Semester: Relationship of microorganisms to man and to other organisms. Includes medical, applied and ecological aspects of microbiology. (Prerequisite: Biol. 341.)

Biol. 361	4 Credits	Fall
Biol. 362	4 Credits	Spring

Cell Biology (3+3)

Detailed structure, including ultrastructure, and function of the cell; isolation, composition, and biochemical properties of cell organelles and their integration and genetic control. Fall Semester: structure, biochemistry of cell constituents, enzymes, electron transport, photosynthesis and respiration. Spring semester: intermediary metabolism, genetic control and regulation, and specialized cellular functions such as membrane transport, membrane potentials, motility, etc. (Prerequisites: for Biol. 361, a year each of college chemistry and biology; for Biol. 362, Biol. 361.)

Biol. 401	30 Credits	Fall
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Medical Technology

Twelve-month medical technology internship at an affiliated hospital school, including work in clinical chemistry, hematology, microbiology, serology, parasitology, and histologic technique. (Prerequisites: senior standing in medical technology curriculum with the prior two semesters having been in residence at the University of Alaska; acceptance by and affiliated school of medical technology.)

Biol. 414	4 Credits	Spring
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Comparative Physiology (3+3)

Functional variations and interrelationships among the major animal phyla; includes ionic and osmotic regulation, temperature regulation, metabolism, excretion, respiration, cardiovascular systems, nerve and muscle function. (Prerequisites: Biol. 210, Chem. 106; Chem. 223 or 321 and Biol. 361-362 recommended.)

Biol. 416	3 Credits	Spring
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Plant Physiology (2+3)

Functions of the vascular plants; plant-soil-water relations; synthesis and metabolism of organic compounds; growth and development. (Prerequisites: Biol. 210, Chem. 106, Chem. 223 or 321 and Biol. 361-362 recommended. Offered alternate years; next offered 1972.)

Biol. 441	3 Credits	Spring
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Principles of Animal Behavior (2+3)

Basic principles (causal factors and functional consequences) in the behavior of individual organisms and social groups, and in the development of behavior patterns. (Prerequisites: Biol. 106 or 203; Biol. 217 or 309-310; and Biol. 210.)

Biol. 491	Credits Arr.	Fall
Biol. 492	Credits Arr.	Spring

Seminar

Topics in biological sciences.

Biol. 493	Credits Arr.	Fall
Biol. 494	Credits Arr.	Spring

Special Topics

Special fields in biological sciences. (Prerequisite: senior standing or permission of the instructor. Offered as demand warrants.)

Biol. 495	Credits Arr.	Fall
Biol. 496	Credits Arr.	Spring

Research

Guided investigation, either laboratory or field, for qualified seniors. (Admission by arrangement.)

Biol. 608	3 Credits	Spring
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Parasite Ecology (2+3)

Ecology of animal parasites. (Prerequisites: Biol. 307 and permission of the instructor. Offered as demand warrants.)

Biol. 615	1 Credit	Fall
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History of Biology (1+0)

The progress of biological thought and philosophy from ancient to modern times. (Offered as demand warrants.)

Biol. 616	3 Credits	Spring
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Principles and Methods of Taxonomy (2+3)

Modern taxonomic ideas and their application to zoological and botanical problems. (Offered alternate years; next offered 1973.)

COURSE DESCRIPTIONS 203

Biol. 618 2 Credits Spring
Biogeography (2+0)

Spatial and temporal geography of plant and animal groups; emphasis on environmental and historical features controlling present patterns of distribution. (Offered alternate years; next offered 1972.)

Biol. 624 3 Credits Spring
Plant Ecology (2+3)

Occurrence, abundance, and productivity of plant species; structure, composition, and variation in time and space of plant communities; related environmental aspects. Current concepts and controversies; methods of analysis. (Prerequisites: Biol. 303, 331, 334, or 416; and permission of the instructor. Applied Statistics 402 strongly recommended. Offered alternate years; next offered 1973.)

Biol. 627 3 Credits Fall
Physiological Ecology (2+3)

A study of those physiological processes primarily involved in the interaction of animals with their environment. Special emphasis will be placed on northern habitats. (Prerequisites: a physiology course and Biol. 303.)

Biol. 629 3 Credits Fall
Animal Behavior (3+0)

Principles of the behavior, causal factors, functional consequences, developmental, and evolutionary histories of behavioral patterns. (Prerequisites: Biol. 303; 414 and permission of the instructor. Offered alternate years; next offered 1972.)

Biol. 637 2 Credits Fall
Modern Evolutionary Theory (2+0)

Contemporary ideas and problems of the mechanics of evolution.

Biol. 641 3 Credits Fall
Microbial Physiology (2+3)

The principal types of autotrophic and heterotrophic microbial metabolism. Photosynthesis, nitrogen fixation, metabolism of iron and sulfur bacteria. Fermentation, respiration, biosynthetic pathways. (Prerequisites: Biol 341, 342; Chem. 452, or permission of the instructor. Offered as demand warrants.)

Biol. 652 3 Credits Spring
Marine Ecology (3+0)

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. 303, Chem. 212, 322; Geol. 411 or permission of the instructor. Offered alternate years; next offered 1973.)

Biol. 691 Credits Arr. Fall
Biol. 692 Credits Arr. Spring
Seminar

Topics in biological sciences. (Offered as demand warrants.)

Biol. 693 Credits Arr. Fall
Biol. 694 Credits Arr. Spring
Special Topics

Various subjects, including advanced studies in ecology, evolution, taxonomy, mycology, biogeography, physiology, animal behavior, etc. (Admission by arrangement.)

Biol. 695 Credits Arr. Fall
Biol. 696 Credits Arr. Spring
Research

Investigation, either field or laboratory, of a problem of lesser scope than the thesis, or supplementary to the thesis. (Admission by arrangement.)

Biol. 697 Credits Arr. Fall
Biol. 698 Credits Arr. Spring
Thesis

(Admission by arrangement.)

BROADCASTING

Brd. 100, 200, 300, 400 Fall-Spring
Radio Operations (0+3) 1 Credit

Training in practical radio operations. Participation on KUAC staff required. May be repeated for a maximum of four credits.

Brd. 211 3 Credits Fall-Spring
Introduction to Broadcasting (3+0)

A survey of radio and television, with emphasis on the history, financing, regulation, and operation of the broadcasting industry.

Brd. 213 2 Credits Fall-Spring
Announcing (1+2)

Microphone techniques, role of the announcer in broadcasting. Fundamentals of announcing; their practical application. (Prerequisite: Sp.C. 111 or admission by arrangement.)

Brd. 215 3 Credits Fall-Spring
Broadcast Production (2+3)

Use of studio equipment; radio-TV production techniques; radio-TV station organization; tape editing; sound effects.

Brd. 216 3 Credits Spring
Television Production (2+4)

Basic aspects of television production; floor directing, audio, camera, telecine, staging, lighting, switching.

Brd. 217 3 Credits Fall-Spring
Writing for Radio and Television (3+0)

Preparation of announcements, interviews, music continuity, special events programs, documentaries, commentaries, news, and other basic radio and television continuity.

Brd. 331 3 Credits Fall-Spring
Radio-Television Advertising (2+3)

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: Brd. 217 or permission of the instructor.)

Brd. 341 3 Credits Fall-Spring
Radio-Television News (2+4)

Responsible news writing, editing, processing and delivery for the broadcast media. Special emphasis on ethical considerations in broadcast journalism. (Prerequisite: Brd. 217 and Jour. 201 or by permission.)

Brd. 371 3 Credits Every third semester
Educational Broadcasting (3+0)

The foundations of educational broadcasting, financing; ownership; programming various educational media: PTV, ITV, P-RADIO, CCTV. Educational broadcasting's role in the U.S.

Brd. 372 3 Credits Every third semester
Methods of Instructional Broadcasting (2+4)

Studio practices and procedures for the production of instructional programs. Underlying educational philosophy and actual in-studio practice.

Brd. 493 Credits Arranged Fall
Brd. 494 Credits Arranged Spring
Special Topics

Various subjects (Admission by arrangement. Offered as demand warrants.)

BUSINESS ADMINISTRATION

B.A. 151 3 Credits Spring
Introduction to Business (3+0)

Business organization, nature of major business functions such as management, finance, accounting, marketing, personnel administration. The opportunities and requirements for professional business careers.

B.A. 165 3-4 Credits Fall-Spring
B.A. 166 3-4 Credits Fall-Spring
Business Administration for Technicians

A survey of core areas of business administration with particular emphasis upon organization and operation of small and middle-scale businesses. Business law, personal finance, manufacturing, marketing and finance at the introductory level. An introduction to business enterprise for non-business majors. (Prerequisites: Associate degree or freshman standing, except that credit may not be counted toward the four-year degrees in business and economics.)

B.A. 223 3 Credits Fall-Spring
Real Estate Law (3+0)

A practical course surveying the various kinds of deeds and conveyances, mortgages, liens, rentals, appraisals and other transactions in the field of real estate and the law. (Offered only at ACC.)

B.A. 231 3 Credits Fall
B.A. 232 3 Credits Spring
Basic Business Writing (3+0)

A study of the basic techniques employed in written business communications. Work in the means of clarifying ideas for business use.

COURSE DESCRIPTIONS 205

- B.A. 253 1 Credit Fall
 B.A. 254 1 Credit Spring
 Business Practicum (0+1)

Work experience in an approved position with supervision and training in various phases of a business or institute. No student can receive more than eight (8) credits for work experience course of the practicum or internship type. (Prerequisite: Permission of the head of the department.)

- B.A. 292 3 Credits Spring
 Introduction to Data Processing (3+0)
 (Same as O.A. 292.)

Introduction to data processing. Related management.

- B.A. 325 3 Credits Fall-Spring
 Financial Management (3+0)

Intensive analysis of the methods of financial planning and control, asset management, and other functions performed by the financial executive.

- B.A. 331 3 Credits Fall
 B.A. 332 3 Credits Spring
 Business Law (3+0)

Survey of the legal aspects of business problems; basic principles, institutions, and administration of law. Fall semester: contracts, agency, employment, negotiable instruments, and personal property sales. Spring semester: insurance, suretyship, partnerships, corporations, real property, trusts, wills, bankruptcy, torts and business crimes. (Prerequisite: junior standing.)

- B.A. 343 3 Credits Fall
 Principles of Marketing (3+0)

Role of marketing in society and economy. The business firm as a marketing system, management of the firm's marketing effort. (Prerequisite: Acc. 101, 102.)

- B.A. 359 3 Credits Fall-Spring
 Regulation of Industry (3+0)

Effects of government regulation, economic policy and executive policy on private and public enterprise.

- B.A. 360 3 Credits Spring
 Production Management (3+0)

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 3 Credits Fall-Spring
 Industrial Relations (3+0)

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. 371 4 Credits Fall
 Business Data Processing

An introductory analysis of computer based management information systems. Required for all business administration majors.

- B.A. 372 3 Credits Fall-Spring
 Business Simulation

Realistic exercises in management using computer simulated models. Required for all business administration majors. (Prerequisite: B.A. 371, or equivalent programming background and junior standing.)

- B.A. 423 3 Credits Fall-Spring
 Investment Management (3+0)

Management securities, portfolios of individuals and institutions; basic security analysis; investment policies of banks, insurance companies, investment companies, and fiduciaries.

- B.A. 424 3 Credits Spring
 Managerial Economics (3+0)

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. 425 3 Credits Fall-Spring
 Advanced Corporate Financial Problems (3+0)

A consideration of corporate financial problems, planning and controls, and major functions performed by corporate financial managers. (Prerequisite: B.A. 325.)

- B.A. 442 3 Credits Fall**
Marketing Institutions and Channels (3+0)
 Analysis of industry and firm operations as marketing institutions; evolution of distribution channels; and contemporary marketing problems. (Prerequisite: B.A. 343.)
- B.A. 443 3 Credits Spring**
Marketing and Analysis of Retailing Management (3+0)
 Factors influencing behavior of consumer and business units; behavior change. The management of retailing functions in marketing; application of management principles in marketing system analysis and control (Prerequisite: B.A. 343.)
- B.A. 444 3 Credits Spring**
Industrial Marketing (3+0)
 Analysis of the marketing structure for industrial products. Product lines, channels of distribution, selling, pricing, warehousing and wholesaling problems. (Prerequisite: B.A. 343.)
- B.A. 462 3 Credits Spring**
Administrative Policy (3+0)
 Organization role in a dynamic society; decision problems in varying social, economic, and political environments.
- B.A. 480 3 Credits Fall-Spring**
Organization Theory (3+0)
 Literature of organizational theory; emphasis on theoretical concepts, social science research techniques and organizational behavior. (Prerequisites: junior standing, completion of behavioral science requirements, or permission of the instructor.)
- B.A. 490 3 Credits Spring**
Social Responsibilities of Business (3+0)
 A study of the rights and duties of businessmen in specific fields in the light of those principles which have graced the perennial moral tradition of our Western world. Dilemmas caused by the apparent conflict of such values as family well-being, personal integrity and career advancement. Business involvement in urban problems.
- B.A. 493 Credits Arr. Fall**
B.A. 494 Credits Arr. Spring
Special Topics
- B.A. 624 3 Credits Spring**
Seminar in Managerial Economics (3+0)
 A survey of present sources of economic data and an intensive study of the most up-to-date methods of applying this data to the problems of business planning. A study of emerging business strategies resulting from the "information explosion" and the "electronic age."
- B.A. 648 3 Credits Fall-Spring**
Mathematical Method and Computers Workshop (3+0)
 Selected topics in the use of mathematical models, econometric techniques and computers in marketing; individual research projects. (Prerequisite: permission of the instructor.)
- B.A. 681 3 Credits Fall-Spring**
Seminar in Organization Theory (3+0)
 Through the literature of organization theory and actual field work this course seeks to familiarize the student with persistent organizational problems such as motivation, inter-group conflict and resistance to change. (Prerequisites: Post graduate or graduate standing; Approval of graduate student's advisory committee or the department head.)
- B.A. 682 3 Credits Fall**
Seminar in American Business Ethics (3+0)
 A survey of attitudes and concepts which have shaped and are shaping business response to the moral demands of our society. A consideration and critique of the foundations of American Business Ethics.
- B.A. 689 3 Credits Fall**
Comparative Business Management (3+0)
 Survey of the differing approaches to management decision making in various parts of the world, especially Russia, Europe and the United States.
- B.A. 690 3 Credits Spring**
Seminar in Finance (3+0)
 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.)

COURSE DESCRIPTIONS 207

B.A. 691 3 Credits Fall
Seminar in Marketing (3+0)

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 3 Credits Fall-Spring
Seminar in Production (3+0)

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. (Prerequisites: post-graduate or graduate standing. Approval of graduate student's advisory committee or the department head.)

B.A. 693 Credits Arr. Fall

B.A. 694 Credits Arr. Spring
Special Topics

B.A. 696 3 Credits Spring
Orientation to Research (3+0)

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. (Prerequisites: 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 Credits Arr. Fall

B.A. 698 Credits Arr. Spring
Thesis

CHEMISTRY

Chem. 103 4 Credits Fall

Chem. 104 4 Credits Spring
Contemporary Chemistry (3+3)

Descriptive courses with laboratory designed to provide orientation in chemistry for students in non-science and science related curricula. Either

semester may be taken separately without prerequisites. Chem. 103: Introductory principles of inorganic chemistry and their applications. Chem. 104: Principles and applications of the chemistry of carbon in a modern economic, social and biological context.

Chem. 105 4 Credits Fall
General Chemistry (3+3)

Chem. 106 4 Credits Spring
General Chemistry & Introductory Qual. Analysis (3+3)

An introduction to chemistry, including atomic and molecular structure; the principles of chemical change and related energy changes. Chemistry 106 includes the chemistry of the elements. (Prerequisite: High school chemistry or permission of the instructor. For Chem. 106, Chem. 105 is required.)

Chem. 211 4 Credits Fall
Chemical Principles (3+3)

An intensive, systematic study of the laws and concepts of chemistry, with considerable emphasis on mathematical aspects. Laboratory work will include both qualitative and quantitative procedures. (Prerequisites: High school chemistry or Chem. 103-104 and satisfactory performance on an advanced placement examination given three weeks into the semester, with Math 200 at least corequisite. Four advanced placement credits may be given upon completion of Chem. 211 with a grade of C or better.)

Chem. 212 4 Credits Fall-Spring
Introductory Quantitative Analysis (2+6)

The theoretical treatment of statistics, electrochemistry, and radiant energy methods. A rigorous treatment of acid-base, oxidation-reduction, and complex equilibria. The laboratory includes practice in volumetric, gravimetric, radiant energy, and electrochemical methods. (Prerequisites: Chem. 106 or 211, Math. 106 or equivalent)

Chem. 223 4 Credits Fall
Introductory Organic Chemistry (4+0)

An integrated, intensive, one-semester study of aliphatic and aromatic organic compounds, their occurrence, methods of preparation, reactions, and uses. (Prerequisite: Chem. 106 or 211.)

Chem.	321	3 Credits	Fall
Chem.	322	3 Credits	Spring
Organic Chemistry (3+0)			

A systematic study of the more important classes of carbon compounds, reactions of their functional groups, methods of synthesis, relations, and uses. (Prerequisite: Chem. 106 or 211 for Chem. 321; Chem. 321 for Chem. 322.)

Chem.	324	3 Credits	Spring
Organic Laboratory (1+8)			

A laboratory course designed to illustrate modern techniques of isolation, purification, analysis, and structure determination of covalent, principally organic, compounds. (Prerequisites: Chem. 223 or 321 or permission of the instructor.)

Chem.	331	3 Credits	Fall
Chem.	332	3 Credits	Spring
Physical Chemistry (3+0)			

Fall semester: kinetic theory of gases, principles of thermodynamics, with applications to solutions, phase equilibria and chemical equilibria. Spring semester: chemical kinetics, electrochemistry, atomic, and molecular structure. (Prerequisites: Chem. 106 or 211, Math 202, Phys. 104 or 212 or permission of the instructor; Chem. 331 for Chem. 332.)

Chem.	333	1 Credit	Fall
Chem.	334	1 Credit	Spring
Physical Chemistry Lab (0+3)			

Fall semester: thermodynamics, chemical equilibria, thermochemistry and phase equilibria. Spring semester: chemical kinetics, electrochemistry, molecular structure and photochemistry. (Prerequisites or corequisites: Chem. 331; Chem. 332 for Chem. 334.)

Chem.	362	1 Credit	Spring
Scientific Glassworking (0+3)			

Construction of scientific glassware. (Prerequisite: junior standing in chemistry or permission of the instructor.)

Chem.	402	3 Credits	Spring
Inorganic Chemistry (3+0)			

Systematic application of the theories of atomic structure and chemical bonding to the elements as they appear in the Periodic System. (Prerequisite or corequisite: Chem. 332.)

Chem.	416	4 Credits	Spring
Instrumental Chemical Analysis (2+6)			

A course designed to promote a basic understanding and working ability in electronics as related to analytical instrumentation. A survey of instrumental methods, emphasizing the chemical and physical properties of the system. The laboratory includes basic circuitry as well as more complex instrumental methods. (Prerequisites: Chem. 212 with Chem. 332 at least corequisites.)

Chem.	421	3 Credits	Fall
Advanced Organic Chemistry (3+0)			

The theoretical interpretation of organic structure and reactions. (Prerequisites: Chem. 322, 332.)

Chem.	425	3 Credits	Fall
Advanced Organic Laboratory (1+8)			

A laboratory course in the application of modern techniques to the rational synthesis of covalent organic and inorganic compounds. (Prerequisites: Chem. 223 or 322 and Chem. 324 or permission of the instructor. A reading knowledge of German is recommended.)

Chem.	431	3 Credits	Fall
Advanced Physical Chemistry (3+0)			

Introduction to quantum chemistry and statistical thermodynamics. (Prerequisite: Chem. 332.)

Chem.	451	4 Credits	Fall
Chem.	452	4 Credits	Spring
General Biochemistry (3+3)			

Fall semester: chemistry of protein, enzymes; photosynthesis; carbohydrate biosynthesis; oxidative metabolism of carbohydrates, fatty acids and amino acids. Spring semester: biosynthesis of lipids, amino acids and nucleic acids; biochemical genetics: the genetic code, biosynthesis of protein, metabolic controls. (Prerequisite: Chem. 322; Chem. 331 and 332 recommended or permission of the instructor.)

Chem.	491	0 or 1 Credit	Fall
Chem.	492	0 or 1 Credit	Spring
Seminar (1+0)			

Discussion of current literature.

COURSE DESCRIPTIONS 209

Chem. 493 Credits Arr. Fall
Chem. 494 Credits Arr. Spring
Special Topics

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. (Prerequisites: junior standing and three semesters (or 12 credits) of college chemistry with a grade of C or better.)

Chem. 495 Credits Arr. Fall
Chem. 496 Credits Arr. Spring
Research

Introduction to research at the undergraduate level. (Admission is by permission of the department head.)

Chem. 602 3 Credits Spring
Advanced Inorganic Chemistry (3+0)

Advanced topics in inorganic chemistry. Topic Areas: Solid state chemistry, X-ray diffraction, thermodynamic aspects, physical methods, unusual oxidation states, etc. (Prerequisite: Chem. 402 or 431.)

Chem. 612 3 Credits Fall
Advanced Analytical Chemistry (3+0)

Applications of equilibria and statistics to analytical methods. (Prerequisites: Chem. 332, 416.)

Chem. 622 3 Credits Spring
Advanced Organic Chemistry II (3+0)

Modern interpretations of organic chemical reactions based on structure, kinetics, and energetics. (Prerequisites: Chem. 322, 332, 421. Offered in alternate years.)

Chem. 632 3 Credits Spring
Advanced Physical Chemistry II (3+0)

Applications of quantum mechanics to molecular bonding and electronic spectroscopy. (Prerequisite: Chem. 431)

Chem. 633 3 Credits Spring
Spectroscopy and Molecular Structure (3+0)

Introduction to the rotational, vibrational, and magnetic resonance spectroscopy of polyatomic molecules. (Prerequisite: Chem. 431.)

Chem. 651 3 Credits Fall
Chem. 652 3 Credits Spring
Advanced Biochemistry (3+0)

Current research in one of the major biochemical disciplines: proteins; lipids; carbohydrates; biochemical genetics; comparative biochemistry; enzymology; physical biochemistry; vitamins and hormones. Arranged in consultation with instructor. (Prerequisites: Chem. 451 and 452 or equivalent.)

Chem. 661 3 Credits Fall-Spring
Chemical Oceanography I (3+0)
(Same as OCE 661.)

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, 332, or permission of the instructor.)

Chem. 663 3 Credits Fall-Spring
Chemical Oceanography II (3+0)
(Same as OCE 663)

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. (Prerequisite: Chem. 661, or permission of the instructor. Offered in alternate years.)

Chem. 665 2 Credits Fall-Spring
Cellular Biochemistry (2+0)

Chemistry, structure and metabolism of microorganisms including growth kinetics and energetics, transport and control processes. (Prerequisite: Chem. 452 or equivalent. Offered in alternate years.)

Chem.	691	1 Credit	Fall
Chem.	692	1 Credit	Spring
Seminar (1+0)			
Reviews of current research.			
Chem.	693	Credits Arr.	Fall
Chem.	694	Credits Arr.	Spring
Special Topics			
Various subjects, including kinetics, thermodynamics, statistical mechanics, photochemistry, colloid chemistry, nuclear chemistry, etc.			
Chem.	695	Credits Arr.	Fall
Chem.	696	Credits Arr.	Spring
Research			
Research which is not directly connected with thesis work. (Admission by arrangement and permission of the department head.)			
Chem.	697	Credits Arr.	Fall
Chem.	698	Credits Arr.	Spring
Thesis			

CIVIL ENGINEERING

C.E.	112	3 Credits	Spring
Elementary Surveying (2+3)			
Use of transit, level and plane table, stadia, circular curves, elementary theory of measurement. (Prerequisite: E.S. 111.)			
C.E.	116	3 Credits	Spring
Mapping (2+3)			
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 the instructor. Offered in alternate years, 1973, 1975.)			
C.E.	334	3 Credits	Spring
Properties of Materials (1+6)			
Introduction to the properties of engineering materials. Bonding, crystal, and amorphous structures. Relationships between microstructure and engineering properties. Modification of properties and environmental serviceability.			
C.E.	344	3 Credits	Spring
Water Resources Engineering (3+0)			
Fundamentals of engineering hydrology and hydraulic engineering. Precipitation, runoff, statistical methods, flood control, open channels, and groundwater. (Prerequisite: E.S. 341.)			
C.E.	402	2 Credits	Spring
Transportation Engineering (2+0)			
Administration, economics, location, design, construction and maintenance of highways, railways, airports and other transportation facilities. (Prerequisite: C.E. 435 or permission of the instructor.)			
C.E.	412	3 Credits	Spring
Elements of Photogrammetry (2+3)			
Elementary study of aerial and terrestrial photographs as applied to surveying and mapping. (Prerequisite: permission of the instructor. Offered in alternate years.)			
C.E.	415	3 Credits	Fall
Advanced Surveying (2+3)			
Traverses, curves, field astronomy, state coordinate systems, adjustments. (Prerequisite: C.E. 112.)			
C.E.	416	1 Credit	Spring
Boundary Surveying (1+0)			
Surveying problems related to land subdivision. Both metes and bounds descriptions and platted subdivisions are considered. Strongly recommended for those who wish to practice land surveying. (Prerequisite: C.E. 415 or other surveying experience acceptable to the instructor.)			
C.E.	422	2 Credits	Spring
Foundation Engineering (2+0)			
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	4 Credits	Spring
Structural Analysis (3+3)			
Statically determinate structures. Loadings. Graphical and analytical solutions for stresses and deflections. Indeterminate structures. Influence lines. (Prerequisite: E.S. 331.)			

COURSE DESCRIPTIONS 211

C.E. 432 4 Credits Spring
Structural Design (3+3)

Planning of structural systems, detail connections. Reinforced concrete. Introduction to ultimate load theory. Prestressing. Composite action. (Prerequisite: C.E. 431.)

C.E. 435 3 Credits Fall
Soil Mechanics (2+3)

Identification, description, and physical properties of soils. Subsurface exploration, frost action. Entire soil mass surveyed for effect on substructure design. (Prerequisite: E.S. 331, C.E. 334)

C.E. 441 3 Credits Fall
Sanitary Engineering (3+0)

Theory of works for conservation, collection, treatment, and distribution of water for domestic and industrial use, and theory of wastewater treatment and disposal. (Prerequisite: E.S. 341 or permission of the instructor.)

C.E. 491 Credits Arr. Fall-Spring
SeminarC.E. 493 Credits Arr. Fall
C.E. 494 Credits Arr. Spring
Special TopicsC.E. 603 3 Credits Fall
C.E. 604 3 Credits Spring
Arctic Engineering (3+0)

Application of engineering fundamentals to 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. 611 3 Credits

C.E. 612 3 Credits

Transportation Engineering (3+0)

Land, air, and marine transportation, facilities, design, utilization, planning, and administration.

C.E. 615 3 Credits
Transportation Design (1+6)

Primarily a laboratory course in pavement and embankment design.

C.E. 617 3 Credits Fall
Control Surveys (3+0)

Geodetic surveying, where the shape of the earth must be considered. Both horizontal and vertical control will be studied. Adjustments of level nets, traverses, triangulation, and trilateration. Course will require some computer work. (Prerequisites: Math. 202, C.E. 415, and a good knowledge of FORTRAN.)

C.E. 618 3 Credits Arranged
Transportation Planning

Future design problems with special emphasis on mass transit and mode interconnection. (Prerequisite: C.E. 611 or enrollment in C.E. 612.)

C.E. 620 3 Credits Fall
Civil Engineering Construction (3+0)

Construction equipment and methods, construction management and accounting, construction estimates and costs. (Prerequisites: E.S. 450 or equivalent.)

C.E. 621 3 Credits Fall
Advanced Foundation Engineering (2+3)

Correlation principles in the analysis and design of spread footings, mats, pile foundations, and retaining walls. Specialty correlation to the class of structural design.

C.E. 631 3 Credits Fall
Advanced Structural Analysis (3+0)

Continuation of C.E. 431. Continuity in structure. Elastic and plastic theories. Arches and shells. Tall frames. (Prerequisite: C.E. 431.)

C.E. 632 3 Credits Spring
Advanced Structural Design (2+3)

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 3 Credits Spring
Hydraulic Engineering (2+3)

Advanced analysis and design of hydraulic engineering devices, structures and machines. Special emphasis on hydraulic systems and control.

C.E. 649 3 Credits Fall or Spring
City and Regional Planning (3+0)

Elements of city and regional planning for engineers. Demography, land use, physical planning techniques.

C.E. 661 3 Credits Fall
Advanced Hydrology (3+0)

The fundamentals of precipitation — runoff relationships, hydrograph analysis, general system analysis, statistical analysis. Emphasis given to dynamic hydrologic processes in cold regions. (Prerequisite: Permission of the instructor.)

C.E. 662 3 Credits Spring
Surface Water Dynamics (3+0)

Principles of open channel flow, ice covered flow, unsteady flow, streamflow as a sediment and pollution transport agent. (Prerequisite: E.S. 341.)

C.E. 663 3 Credits Fall
Ground Water Dynamics (3+0)

Fundamentals of geohydrology, hydraulics of flow through porous media, well hydraulics, and ground water pollution, ground water resources development. (Prerequisite: E.S. 341.)

C.E. 670 3 Credits
Waves and Tides (2+1)

(Same as OCE 670) Generation and propagation of waves at sea, theory of waves, wave spectra and forecasting, observation and recording of ocean waves, tsunamis, tides, internal waves.

C.E. 674 3 Credits
Environmental Hydrodynamics (2+1)

(Same as OCE 674 and Phys. 674.) Mechanics of fluids on a rotating earth. Navier Stoke's equations, boundary layer phenomena, turbulent flow, and applications of hydrodynamics to motion of stratified fluids such as the atmosphere and ocean.

C.E. 676 3 Credits
Coastal Engineering (2+1)

(Same as OCE 676) Review of deep and shallow water waves, littoral drift, coastal structures, pollution problems, harbor seiches. (Prerequisite: C.E. 670.)

C.E. 691 1 Credit Fall
C.E. 692 1 Credit Spring

Graduate Seminar (1+0)

Reports and papers on engineering topics. Practice in public speaking. (Prerequisite: permission of the instructor.)

C.E. 693 Credits Arr. Fall
C.E. 694 Credits Arr. Spring

Special Topics

Various subjects. (Prerequisite: permission of the instructor.)

C.E. 697 Credits Arr. Fall
C.E. 698 Credits Arr. Spring

Thesis

Individual study or research for students of special aptitude.

COMPUTER INFORMATION SYSTEM

CIS 100 2 Credits Fall
Introduction to Fortran (1+3)

A first course in computer programming emphasizing the process of creating, working and documented computer programs. The FORTRAN language is used and a problem a week will be programmed.

CIS 101 3 Credits
Introduction to Data Processing (3+0)

A beginning course covering topics in machine organization, problem formulation, programming, information flow, management, and applications of automatic data processing systems.

CIS 103 3 Credits
Techniques of Organization (3+0)

Programming sequential and random access devices. Methods of organizing, sorting, merging files on cards, tapes, disks, and drums.

CIS 104 3 Credits
Operations Management (3+0)

Methods of accounting for, organizing, and supervising operation of computing equipment. Personnel relations and company organization.

CIS 201 3 Credits Spring
COBOL (2+2)

Training and practice in writing problems in the COBOL language. Multiple file processing, editing, and reporting generating routines. (Prerequisite: B.A. 371.)

CIS 202 3 Credits
Principles of Programming with Business Applications (3+0)

Commonly automated areas in businesses are examined. Selected problems are programmed in COBOL, Payroll, Inventory Control, Accounts Renewable, General Ledger. (Prerequisites: Acc. 102, B.A. 371.)

CIS 209 3 Credits
Introduction to Operating Systems (3+0)

Techniques in multi-programming, queueing, scheduling, and handling interrupts from peripheral devices.

CIS 210 4 Credits
Systems Design and Analysis (3+3)

Concepts and techniques of designing information systems. Topics include systems theory; data collection classification, transmission, and display, data base organization; sequential and random techniques; online systems; and computer software related to system design.

CIS 220 3 Credits Spring
Basic Programming Languages (3+0)
 Programming in selected computer languages including ASSEMBLER, RPG, and machine language. (Prerequisite CIS 101)

ECONOMICS

Econ. 101 3 Credits Fall-Spring
Introduction to Current Economic Problems (3+0)

A one semester course designed primarily for the student who plans no further work in economics. The course utilizes a less theoretical approach than is customary in introductory economics courses and focuses on such current problems as unemployment, inflation, economic growth, balance of payments, industrial strikes, etc.

Econ. 121 3 Credits Fall
Principles of Economics I (3+0)

Introduction to economics; analysis and theory of national income; money and banking; public finance and taxation; economic systems.

Econ. 122 3 Credits Spring
Principles of Economics II (3+0)

Theory of prices and markets; income distribution; contemporary problems of labor, agriculture, public utilities, international economic relations.

Econ. 221 3 Credits Fall
Introduction to Statistics for Economics and Business

Problems in economics and business translated into statistical terms. Organizing of data; identifying of populations and their parameters; sample selection and use of sample data; linear correlations; time series analysis; index numbers. (Prerequisite: Math. 106 or Econ. 122.)

Econ. 232 3 Credits Spring
Economic History of the United States (3+0)

History of the U.S. economy with special emphasis on the process of economic growth. (Offered alternate years. Next offered 1972-73.)

Econ. 321 3 Credits Fall
Intermediate Microeconomics (3+0)

Analysis of demand and supply under various market forms; cost and theory of production; factor pricing and theory of distribution; survey of welfare economics. (Prerequisites: Econ. 121, 122, Math. 200 or permission of instructor.)

Econ. 324 3 Credits Spring
Intermediate Macroeconomics (3+0)

Concepts and measurement of income; analysis of aggregate demand and supply, and their relation to prices, employment and growth. (Prerequisites: Econ. 121, 122, Math. 200 or permission of the instructor.)

Econ. 337 3 Credits Fall-Spring
Economic Development (3+0)

Theories of growth and development; problems of economic development illustrated with case studies; analysis of major policy issues. (Prerequisites: Econ. 321; 324 or 350; or permission of the instructor. Offered as demand warrants.)

Econ. 350 3 Credits Spring
Monetary Economics (3+0)

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. (Prerequisites: Econ. 121, 122.)

Econ. 351 3 Credits Fall-Spring
Public Finance and Taxation (3+0)

Government taxation, borrowing and spending; economic effects of taxation; influence of fiscal policy on economic activity. (Prerequisites: Econ. 121, 122. Offered in alternate years. Next offered, Fall 1971-72.)

Econ. 420 3 Credits Spring
Labor Economics (3+0)

Labor market analysis; employment and unemployment, wage rates, structure and composition of the labor force; economic aspects of unionism, labor legislation, social insurance. (Prerequisites: Econ. 121, 122.)

Econ. 423 3 Credits Fall
Comparative Economic Systems (3+0)

Contrasts structure, institutions, and dynamics of selected private enterprise, collectivist, and underdeveloped economies. (Prerequisites: Econ. 121, 122.)

Econ. 425 3 Credits Fall-Spring
History of Economic Thought (3+0)

Economic thought from the physiocrats to the present, classical and neoclassical theory, exponents and critics; contemporary development in economic theory. (Prerequisites: Econ. 121, 122 and three credits of upper division courses in economic or other social sciences. Offered alternate years. Next offered 1972-73.)

Econ. 426 3 Credits Fall
Statistical Methods (3+0)

Classical statistics and regression analysis applied to economics and business problems. Specific topics covered include descriptive statistics, elements of probability, sampling, point and interval estimation, hypothesis testing, analysis of variance and regression analysis. (Prerequisites: Econ. 221, Math. 200.)

Econ. 429 3 Credits As demand warrants
Business Fluctuations (3+0)

Analysis of fluctuations in economic activity; theories of business fluctuation; methods of control and forecasting. (Prerequisites: Econ. 221, 321, 324, 350; or permission of the instructor.)

Econ. 435 3 Credits Fall
Economics of Resources (3+0)

Concepts of resources; interaction among resources, industrialization and economic development; theories and problems of conservation; emphasis on Alaska. (Prerequisites: Econ. 321.)

Econ. 463 3 Credits Fall
International Economics (3+0)

Pure theory of international trade; comparative cost, terms of trade, and factor movements. International disequilibrium; balance of payments and its impacts on national economy, capital movement, economic development through international trade. (Prerequisites: Econ. 321, 324 or 350; or permission of the instructor.)

Econ. 471 3 Credits Fall
Seminar in Economic Theory (3+0)

Content will vary but will deal with advanced topics in economic theory. (Prerequisite: Permission of instructor.)

Econ. 472 3 Credits Spring
Seminar in Contemporary Economic Problems (3+0)

A study of current economic and business problems utilizing the knowledge and analytical techniques obtained in prerequisite courses. (Prerequisites: Econ. 221, 321, and 324.)

Econ. 493 Credits Arr. Fall
Econ. 494 Credits Arr. Spring
Special Topics

Econ. 495 Credits Arr. Fall
Econ. 496 Credits Arr. Spring
Research

Readings and research on individually assigned topics; formal paper required on assigned topic.

COURSE DESCRIPTIONS 215

Econ. 687 3 Credits Fall-Spring
Seminar In Economic Development
and Planning (3+0)

Economic growth, development and planning; sociocultural aspects; policy implications. Population, foreign investment, aid and inflation. (Prerequisite: Econ. 337 or permission of instructor.)

Econ. 688 3 Credits Spring
Economics of Natural Resources (3+0)

Economic analysis relevant to resource use and management; development and conservation of natural resources; taxation; institutional factors and public measures affecting the utilization of natural resources. (Prerequisite: Permission of instructor.)

Econ. 691 Credits Arr. Fall

Econ. 692 Credits Arr. Spring
Seminar in Economic Theory

Econ. 693 Credits Arr. Fall

Econ. 694 Credits Arr. Spring
Special Topics

Econ. 695 1-3 Credits Fall

Econ. 696 1-3 Credits Spring
Seminar in Economic Research

Methods of economic research used in analyzing specific, assigned topics. Discussion of problems encountered, results obtained. Report and formal paper required. (Prerequisites: graduate standing and permission of the instructor.)

EDUCATION

Ed. 111 3 Credits As demand warrants
Audio-Visual Methods for Aides (2+3)

Methods, materials, techniques and practice utilizing projectors, language labs, bulletin boards, and recording machines. *Offered only at ACC.*

Ed. 201 3 Credits Fall-Spring
Orientation to Education (1+6)

Designed to acquaint the prospective teacher with the nature of teaching, including the scholastic, professional, and personality

requirements for effective teaching. Involves laboratory time in the public schools as teacher's aide. Open to all students. Recommended for students majoring or minoring in education.

Ed. 205 4 Credits As demand warrants
Science and Math Methods
for Aides (3+6)

Methods and materials, techniques and practices in teaching science and math. Special considerations in how to assist in a regular classroom situation. Practicum experience as an aide provided by assignment in the local schools. *Offered only at ACC.*

Ed. 206 3 Credits Spring
Language Arts and Reading
Methods for Aides (3+6)

Methods and materials, techniques and practices in the learning areas of language arts and reading. Special emphasis on individual and small group techniques as they would apply to assisting a regular classroom teacher. Remedial techniques in reading are to be stressed. Practicum experience as an aide provided by assignment in local schools. *Offered only at ACC.*

Ed. 301 3 Credits Fall
Social Studies for Elementary
Teachers (3+0)

Methods and materials adaptable to modern curriculum in elementary social studies. (Prerequisites: Ed. 313 and prerequisites thereto.)

Ed. 302 3 Credits Spring
Language Arts for Elementary
Teachers (3+0)

Definition; role of language in children's learning; specific language skills to be taught in grades one through eight; methods and materials for effective teaching; organization for instruction; all aspects of the language arts, except reading. (Prerequisites: Ed. 313 and prerequisites thereto.)

Ed. 304 3 Credits Spring
Literature for Children (3+0)

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. 245 or permission of the instructor.)

Ed. 306 3 Credits Fall
Teaching of Science in Elementary
Schools (3+0)

Modern concepts, methods and materials of teaching science. (Prerequisites: Ed. 313 and prerequisites thereto.)

Ed. 307 3 Credits Spring
Teaching of Arithmetic (3+0)

Present day concepts, methods and materials. (Prerequisites: Math. 121, Ed. 313 and prerequisites thereto. In-service teachers may substitute Math. 345 for the mathematics prerequisites.)

Ed. 308 3 Credits Spring
Physical Education for
the Elementary School (2+3)
 (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. (Prerequisites: Ed. 313 and prerequisites thereto.)

Ed. 309 3 Credits Fall-Spring
Elementary School Music
Methods (3+0)
 (Same as Mus. 309)

Principles, procedures, and materials for teaching music to children at the elementary level. (Prerequisites: Ed. 313 and prerequisites thereto.)

Ed. 311 3 Credits Spring
Audio-Visual Methods
and Materials (3+2)

Selection and use of audio-visual materials in teaching and learning at all levels of education. (Prerequisites: Ed. 313 and prerequisites thereto.)

Ed. 313 3 Credits Fall-Spring
Educational Psychology (3+0)

Application of principles of psychology to classroom teaching and learning. (Prerequisites: Psy. 101, 245 or 246.)

Ed. 332 3 Credits Fall-Spring
Tests and Measurements (3+0)

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. 373. (Prerequisites: Ed. 313 and prerequisites thereto.)

Ed. 345 3 Credits Fall
Sociology of Education (3+0)
 (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 3 Credits Spring
History of Education (3+0)

Development of education in Western civilization and its implications for American education. (Prerequisites: History 101, 102 or History 131, 132.)

Ed. 351 1 Credit Summer
Workshop on Alaska

A workshop consisting of lectures and demonstrations by authorities in anthropology, biology, education, geography, mining, geology, history, literature, art, wildlife, and various other teaching fields.

Ed. 402 3 Credits Fall-Spring
Methods of Teaching (3+0)

Principles and methods of teaching management, routine, daily programs, etc. (Prerequisites: Ed. 332 and prerequisites thereto. Must be taken concurrently with Ed. 452.)

Ed. 404 3 Credits As demand warrants
Methods of Teaching Foreign
Languages (3+0)

Discussion of the particular problems related to the teaching of foreign languages in the secondary schools, evaluation of teaching aids, audio-visual equipment and the language laboratory, and methods such as "grammar-translation," "direct," "audio-lingual," recent research on the subject. (Prerequisites: 100 semester hours, Ed. 332 and prerequisites thereto.)

COURSE DESCRIPTIONS 217

Ed. 405 3 Credits As demand warrants
Methods of Teaching Music (3+0)
 (Same as Mus. 405)

Methods and problems of teaching music in junior and senior high schools, with emphasis on the general music program. (Prerequisites: 100 semester hours, Ed. 332 and prerequisites thereto, and Mus. 232, or permission of the instructor.)

Ed. 406 3 Credits As demand warrants
Methods of Teaching Physical Education (3+0)
 (Same as P.E. 406)

Selection of materials and presentation methods for secondary school physical education. (Prerequisites: 100 semester hours, Ed. 332 and prerequisites thereto.)

Ed. 407 3 Credits As demand warrants
Methods of Teaching Home Economics (3+0)

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. Prerequisites: 100 semester hours, Ed. 332 and prerequisites thereto.)

Ed. 408 3 Credits As demand warrants
Methods of Teaching Business Education (3+0)
 (Same as O.A. 408)

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. Prerequisites: 100 semester hours, Ed. 332 and prerequisites thereto.)

Ed. 409 3 Credits Fall
The Teaching of Reading (3+0)

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. (Prerequisites: Ed. 313 and prerequisites thereto.)

Ed. 421 3 Credits Fall
Secondary Education (3+0)

Development of a working concept of secondary education in the U.S., its history, objectives, curriculum, organization, practices and consideration of current issues. (Prerequisites: Ed. 313 and prerequisites thereto.)

Ed. 422 3 Credits Fall
Philosophy of Education (3+0)

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 3 Credits Fall
Principles and Practices of Guidance (3+0)

Introduction to the philosophies; organization, patterns, tools, and techniques that aid teachers and guidance personnel in preparing students for responsible decision-making in modern society. (Prerequisites: Ed. 332 and prerequisites thereto.)

Ed. 446 3 Credits As demand warrants
Public School Organization, Control, and Support (3+0)

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 6 Credits Fall-Spring
Student Teaching (0+18)

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 128 for requirements for admission to student teaching. May be taken concurrently with Ed. 402.)

Ed. 461 Credits Arr. As demand warrants
Research

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. 480 3 Credits Spring
Education of Culturally Different Youth (3+0)

Interdisciplinary study of problems encountered by teachers in educating culturally atypical pupils. Consideration of psychological and social factors inherent in the educational process. Specific attention given to curricular improvement and teaching strategies appropriate for culturally different students. (Prerequisites: Ed. 313 and prerequisites thereto and junior standing.)

Ed. 491 Credits Arr As demand warrants
Ed. 492 Credits Arr As demand warrants
Seminar

Current topics in education. (Prerequisite: permission of the head of the department.)

Ed. 493 Credits Arr. Fall
Ed. 494 Credits Arr Spring
Special Topics

Various subjects; principally directed study, discussion and research.

Ed. 601 3 Credits Fall-Spring
Master of Arts in Teaching
Seminar (3+0)

Expectations, concerns, and questions regarding elementary and secondary classroom teaching today. Selected major trends, problems and issues in elementary and secondary education and the profession of elementary and secondary teaching. (Prerequisite: admission to Master of Arts in Teaching program or permission of the instructor.)

Ed. 604 3 Credits As demand warrants
Diagnosis and Correction of Reading
Deficiencies (3+0)

Nature of the reading process; emphasis on psychology involved in discerning 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. (Prerequisites: Ed. 409 and experience in the teaching of reading.)

Ed. 608 3 Credits As demand warrants
The Improvement of Elementary
Teaching (3+0)

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 3 Credits As demand warrants
Curriculum Development (3+0)

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. (Prerequisites: Ed. 313 and graduate standing in education.)

Ed. 623 3 Credits As demand warrants
Principles of Individual
Counseling (3+0)
(Same as Psy. 623)

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. (Prerequisites: Ed. 426, Psy. 338 or 406 and permission of the instructor.)

Ed. 624 3 Credits As demand warrants
Group Counseling (3+0)
(Same as Psy. 624)

Kinds and types of groups with emphasis on methods, problems and needed skills in working with groups in a counseling situation. (Prerequisites: Ed. 426, 623.)

Ed. 627 3 Credits Fall
Education Research (3+0)

Techniques of education research; selection of topics and problems, data gathering, interpretation and preparation of reports. (Prerequisite: graduate standing in education.)

Ed. 628 3 Credits As demand warrants
Analysis of the Individual (3+0)
(Same as Psy. 628)

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 (3+0)

(Same as Psy. 629)

Individual intelligence tests with emphasis on the Revised Stanford-Binet Intelligence Scale and the Wechsler Intelligence Scales. (Prerequisites: Ed. 332 and permission of the instructor.)

**Ed. 630 3 Credits As demand warrants
Laboratory in Individual Tests
of Intelligence (0+9)**
(Same as Psy. 630)

Provides laboratory experience in administration of the Revised Stanford-Binet Intelligence Scale or the Wechsler Intelligence Scales. (Prerequisites: Ed. 629 and permission of the instructor.)

**Ed. 631 3 Credits As demand warrants
Advanced Educational Psychology:
Developmental (3+0)**

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 3 Credits As demand warrants
Occupational Information (3+0)**
(Same as Psy. 632)

Principles and practices of vocational guidance. Explains process of choosing a vocation, theories of vocational choice, sources and dissemination of occupational information. (Prerequisites: graduate standing, Ed. 426 and permission of the instructor.)

**Ed. 633 2 Credits As demand warrants
Organization, Administration, and
Supervision of Guidance (2+0)**

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 1 to 3 Credits Arr. Fall-Spring
Counseling Practicum**
(Same as Psy. 634)

Provides supervised field experience, including preparatory activities in an educational and agency setting. (Prerequisite: Approval of instructor. May be repeated for a maximum of six credits.)

**Ed. 636 2 Credits As demand warrants
Advanced Public School Administration:
Cases and Concepts (2+0)**

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 3 Credits As demand warrants
Public School Administration (3+0)**

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. (Prerequisites: Ed. 446 and graduate standing in education.)

**Ed. 638 3 Credits As demand warrants
Supervision and Improvement of
Instruction (3+0)**

Development, purpose, organization of supervisory programs; special attention to current in-service education programs. (Prerequisite: graduate standing in education.)

**Ed. 639 3 Credits As demand warrants
Public School Finance (3+0)**

Contemporary basis for raising and distributing federal, state and local education funds; problems of school financing in Alaska. (Prerequisite: graduate standing in education.)

**Ed. 641 3 Credits As demand warrants
School Law (3+0)**

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. 660 6 Credits As demand warrants
Internship

Field work in an appropriate educational or agency setting. Each student will complete an approved field study project. (Prerequisite: approval of student's advisory committee and admission to candidacy for the Ed.S. degree.)

Ed. 691 Credits Arr. As demand warrants

Ed. 692 Credits Arr. As demand warrants
Education Seminar

Current topics in education. Maximum credit allowed toward advanced degrees: four credits. (Admission by arrangement.)

Ed. 693 Credits Arr. Fall

Ed. 694 Credits Arr. Spring

Special Topics

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 Credits Arr. Fall

Ed. 696 Credits Arr. Spring

Research Education

Independent project in lieu of thesis. (Admission by arrangement. Prerequisite: Ed. 627.)

Ed. 697 Credits Arr. Fall

Ed. 698 Credits Arr. Spring

Thesis

(Offered as demand warrants. Prerequisite: Ed. 627.)

ELECTRICAL ENGINEERING

E.E. 102 2 Credits Fall
Introduction to Electrical Engineering
(2+0)

Basic modern devices concepts, technical skills, and instruments of electrical engineering.

E.E. 203 4 Credits Fall

E.E. 204 4 Credits Spring

Electrical Engineering Fundamentals **(3+3)**

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. 323 1 Credit Fall

E.E. 324 1 Credit Spring

Electrical Engineering Lab I (0+3)

Laboratory problems emphasizing measurement techniques, laboratory procedures, and operation principles of basic instruments. Laboratory exercises basically in circuits, electronics, and control. Semester design problems. (Corequisites: E.E. 333, 334, 353, 372 or permission of the instructor.)

E.E. 332 4 Credits Spring

Electromagnetic Waves and Antennas **(3+3)**

Use of Maxwell's equations in the analysis of waveguides, cavity resonators, and transmission lines; retarded potentials; antennas for radio and microwave frequencies. (Prerequisites: Math. 302, Physics 331.)

E.E. 333 3 Credits Fall

Physical Electronics (3+0)

Basic properties of semiconductors; p-n junctions and transistors, basic properties. (Prerequisite: E.E. 204.)

E.E. 334 3 Credits Spring

Electronic Circuit Design (3+0)

Analysis of the common circuits used in computation, control, and communications; stability considerations; worst case design of functional units. (Prerequisite: E.E. 333.)

E.E. 353 3 Credits Fall

Circuit Theory I (3+0)

Transient analysis by Laplace transform, state variable, and Fourier methods; filter networks, computer aided analysis. (Prerequisite: E.E. 204.)

E.E. 354 3 Credits Spring

Circuit Theory II (3+0)

State variable methods, advanced network analysis and synthesis, filter networks. (Prerequisite: E.E. 353.)

E.E. 403 4 Credits Fall

Electrical Power Engineering I (3+3)

Characteristics and applications of electric motors, generators and transformers; multiphase circuit applications; transients, fault currents, and system stability; power systems. (Prerequisites: E.E. 372, 334.)

E.E. 404 4 Credits Spring
Electrical Power Engineering II (3+3)

Topics in generation, power system operation and management, and distribution which include selection of energy source, plant layout and construction, rate structures, customer relations, and power regulation and relaying. (Prerequisite: E.E. 403.)

E.E. 442 4 Credits Fall
Digital Computers (4+0)

Design functioning of digital computers; system organization, programming, computer arithmetic, combinational and sequential circuits, methods of control, electronic circuitry. (Prerequisite: junior standing in electrical engineering, mathematics or physics, or permission of the instructor.)

E.E. 462 4 Credits Fall
Communication Systems (3+3)

Theory and practice of communications systems; essentials of information theory; operation and maintenance of typical equipment. (Prerequisite: credit or registration in E.E. 334, 432.)

E.E. 471 4 Credits Fall
Fundamentals of Automatic Control I (4+0)

Linear system representation by transfer functions and state variables. The concept of feedback. Time and frequency response of linear systems. Identification. Controllability and observability. Stability by Routh-Hurwitz criterion and frequency plane methods. Specifications of higher order linear systems. System design and compensation. (Prerequisites: E.E. 354, Math. 406, or permission.)

E.E. 472 4 Credits Spring
Fundamentals of Automatic Control II (4+0)

Discrete state variable methods. The Z-transform and its application to sampled-data control systems. Stability and response. Compensation. Control by digital computer. Elements of stochastic control systems, estimation and filtering. Elements of non-linear control, including stability by Liapunov's method. Elements of optimal control, including Pontryagin's principle. (Prerequisites: Math. 371, E.E. 471, or permission.)

E.E. 474 3 Credits Fall
Instrumentation and Measurement (3+0)

Instrumentation theory and concepts; devices, transducers; data sensing, transmission, recording, display, instrumentation systems; remote sensing; hostile environmental conditions. (Prerequisites: E.S. 207, E.E. 314, or permission of the instructor.)

E.E. 481 3 Credits Fall
Electronics and Instrumentation for Scientists and Engineers I (2+3)

Theory and design of solid state electronic circuitry for practicing engineers and scientists in the physical and life sciences. Diodes, transistors, field effect transistors, integrated circuits and other solid state devices. Analysis of modern electronic systems. (Prerequisites: 1 year of college physics, mathematics thru calculus.)

E.E. 482 3 Credits Spring
Electronics and Instrumentation for Scientists and Engineers II (2+3)

Instrumentation theory and concepts; transducers; data transmission, recording and reducing. Digital electronics. Electrical measurement of physical variables and error analysis. (Prerequisite: E.E. 481, or equivalent.)

E.E. 491 1 Credit Fall

E.E. 492 1 Credit Spring

Seminar (1+0)

Current topics. Students will have an opportunity to present papers. (Prerequisite: senior standing in electrical engineering.)

E.E. 493 Credits Arr. Fall

E.E. 494 Credits Arr. Spring

Special Topics

Various subjects studied.

E.E. 631 3 Credits Fall
Quantum Electronics (3+0)

Applied quantum mechanics; stimulated emission; conditions for oscillation and amplification. Applications to microwave and optical gas and solid state masers. Theory and properties of molecular and semiconductor masers, nonlinear and multiple-photon processes, and optical resonators. (Co-requisite: Phys. 651 or permission of instructor.)

E.E. 632 3 Credits Spring
High Frequency Devices (3+0)

Principles of operation of microwave tubes, microwave semiconductor devices, parametric amplifiers, nonlinear elements, ferromagnetics. (Prerequisite: E.E. 332.)

E.E. 635 3 Credits Fall
Advanced Electronic Circuit Design (3+0)

Low noise, low level design; networks for extraction of signals from noise; environmental design; signal conditioning networks. (Prerequisite: E.E. 334 or permission of the instructor.)

E.E. 651 4 Credits Fall
Stochastic Control Systems (4+0)

Performance measure and minimization techniques; continuous and discrete random processes in control systems. Optimal design of systems having stochastic signals and noise. Application of the Wiener-Hopf method to control systems design. Kalman-Bucy filtering methods in the continuous and discrete domain. (Prerequisites: Math. 471, E.E. 472 or permission.)

E.E. 652 4 Credits Spring
Optimal Control (4+0)

Calculus of variations applied to optimal control. The Pontryagin maximum principle, Bellman's principle of optimality. Dynamic programming and the matrix Riccati equation. Optimization under constraints. Minimum-time control. The optimal regulator problem. Elements of optimum-switched systems. (Prerequisites: E.E. 472 or permission.)

E.E. 662 3 Credits Spring
Communication Theory (3+0)

Generalized harmonic analysis, probability in communication systems, random variables, power spectral density, characterization of signals, sampling theory, detection, optimum filtering, coded systems, channel models. (Prerequisite: Math. 302.)

E.E. 672 3 Credits Fall
Underwater Acoustics (3+0)

(Same as OCE 672.) Nature of sound, units and standards, sound-related characteristics of sea water, transmission and transmission losses, effect and discontinuities, reverberation, measurement techniques.

E.E. 674 3 Credits Spring
Instrumentation Systems (3+0)

Design of complete engineering and scientific instrumentation systems; test methodology; cost, reliability, and accuracy considerations; environmental hazards; space applications. (Prerequisite: E.E. 474.)

E.E. 676 1 Credit Spring
Instrumentation Lab II (0+3)

Building and testing systems designed in E.E. 674. (Fee \$20)(Corequisite: E.E. 674.)

E.E. 691 Credits Arr. Fall
E.E. 692 Credits Arr. Spring
Seminar

Current topics at an advanced level. Presentation of student papers.

E.E. 693 Credits Arr. Fall
E.E. 694 Credits Arr. Spring
Special Topics

E.E. 697 Credits Arr. Fall
E.E. 698 Credits Arr. Spring
Thesis

Individual study and research.

ELECTRONICS TECHNOLOGY **(Industrial Technology Program)**

E.T. 51 4 Credits Fall-Spring
DC Circuits (5+12)

The first course in electricity for electronics technicians. Basic physics, electrical terms and units, meters and their use, resistance, Ohms' law, simple circuits, magnetic fundamentals, batteries, Kirchhoff's laws, DC circuit analysis, inductance, and capacitance.

E.T. 52 4 Credits Fall-Spring
AC Circuits (5+12)

Principles of alternating current, vectors, phase relationships, inductive and capacitive reactance and impedance, AC circuit analysis, series and parallel resonant circuits, transformers, and Thevenin's equivalent circuit.

E.T. 55 3 Credits Fall-Spring
Electronics Practice (0+12)

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, and practical aspects of electronics.

E.T. 59 5 Credits Fall-Spring
Mathematics for Electronics (5+3)

Review of arithmetic. Selected topics in algebra, trigonometry, slide-rule computation, graphs, analytical geometry, waveform analysis, decibel calculations, and applications to electronics. (Prerequisite: high school mathematics.)

E.T. 61 4 Credits Spring-Summer
Tubes and Semiconductors (3+6)

Vacuum tubes, semiconductors, transistors. Fundamentals, construction, characteristics, parameters, and specifications. (Prerequisites: E.T. 51, 52, 59.)

E.T. 62 3 Credits Spring-Summer
Electronic Circuits I (4+3)

Power supplies, basic amplifiers, loud speakers, microphones and pickups, and basic oscillators. (Prerequisites: E.T. 51, 52, 59.)

E.T. 63 4 Credits Spring-Summer
Electronic Systems I (3+3)

The radio transmitter, transmission, reception, and detection of radio waves, antennas and transmission lines; the radio receiver; special receiver circuits; frequency modulated transmitters and receiver; transistor applications; single side-band and communications. (Prerequisites: E.T. 51, 52, 59.)

E.T. 66 3 Credits Spring-Summer
Electronic Practice II (0+12)

Layout and assembly of radio-frequency equipment, practical aspects of electronics, alignment and repair procedures, practical experience in electronics, use of test equipment, and preparation for license examinations. (Prerequisite: E.T. 55.)

E.T. 71 4 Credits Summer-Fall
Electronic Circuits II

E.T. 72 3 Credits Summer-Fall
Electronic Circuits III (10+12)

E.T. 73 3 Credits Summer-Fall
Microwave Electronics

Nonsinusoidal waveshapes, multivibrators, blocking and shock-excited oscillators, wave-shaping, circuits, limiters, clippers, counters, sweep-generator circuits, special power supplies, systems, transistor applications, television transmitters, and receivers. Microwaves; microwave oscillators, transmitters, duplexers, antennas, amplifiers, mixers, receivers, and multiplexing. (Prerequisites: E.T. 61, 62, 63.)

E.T. 76 3 Credits Summer-Fall
Logic and Gate Circuits (3+3)

Lecture and laboratory developing basic logic circuits. Includes studies in adders, subtractors, Boolean Algebra and all standard gates. (Prerequisites: E.T. 61, 62, 63.)

E.T. 78 4 Credits Summer-Fall
Solid State Electronics (3+9)

Basic solid state theory and application including laboratory work in the following areas: methods of circuit analysis, circuit aspects of field effect transistors, integrated circuits, and silicon controlled rectifiers. (Prerequisites: E.T. 61, 62, 63.)

E.T. 81 4 Credits Fall-Spring
Telemetry (3+6)

Telemetry techniques including signal conditioning, frequency division telemetry, data sampling, pulse amplitude modulation, pulse duration modulation, pulse code modulated telemetry, subcarrier discriminators. PAM/PDM decommutation, and real time monitoring. (Prerequisites: E.T. 71, 72, 75, 78.)

E.T. 84 5 Credits Fall-Spring
Digital Computer Theory and Application (3+9)

Theory, organization, functioning and maintenance of large digital computer systems. (Prerequisites: E.T. 72, 75, 78.)

E.T. 85 4 Credits Fall-Spring
Navigational Ground Equipment (4+0)

Analysis of ground navigational aids such as ILS, GCA, Tacan, radar and telemetry. Theory,

application and circuitry of transmitters, receivers, and antennas. *Offered only at ACC.*

E.T. 86 4 Credits Fall-Spring
Basic Aircraft Systems II (4+0)

Theory, organization, function, and maintenance of large aircraft electrical systems; DC, AC, power control and distribution. Control systems; fire detection, deicing, brakes and warning systems. *Offered only at ACC.*

E.T. 88 4 Credits Fall-Spring
Avionics Systems III (4+0)

Theory, organization, function, and maintenance of large aircraft navigational systems; ADF, VOR, DME, Weather and Doppler Radar, autopilot, and flight director systems. Communications systems: LF, HF, VHF, UHF equipment. *Offered only at ACC.*

E.T. 91 5 Credits Fall-Spring
Semiconductor Theory and Application

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, negative impedance devices, digital switching circuits, high frequency description of transistors, and circuit aspects of field effect transistors. (Prerequisite: permission of the instructor.)

ELECTRO-MECHANICAL TECHNOLOGY

E-M.T. 73 5 Credits Summer-Fall
Mechanics I (3+9)

Study of the mechanical elements and mechanical systems used in data processing equipment. The functional principles of the mechanics will be studied. The characteristics of mechanical systems are analyzed and related to application requirements. Mechanics studied include power input, power transmission devices, inductors, calculators, feeders, punches, accumulators, and printers. Emphasis is placed on the maintenance of the above.

E-M.T. 74 4 Credits Summer-Fall
Storage Principles (2+6)

Theory and field application of industrial and geophysical electro-mechanical storage devices.

E-M.T. 76 4 Credits Summer-Fall
Electro-Mechanical Industrial Control Devices (3+6)

An introduction to the theory and application and transducer sensor devices, continuous-balance strip-chart recorders, magnetic amplifiers, analog computers, synchro-control systems, and gas-tube switching and timing circuits. Introduction to automatic-control principles.

E-M.T. 79 4 Credits Summer-Fall
Fluid Power Systems (2+6)

Hydraulics and fluid mechanics with mathematical equations to solve some of the common problems of application.

E-M.T. 85 5 Credits Fall-Spring
Mechanics II (3+9)
Continuation of Mechanics I.

E-M.T. 86 3 Credits Fall-Spring
Vacuum Technique Processes (2+6)

Vacuum systems maintenance, leak detection, low-pressure measurements of gas flow, special low-pressure techniques, and vacuum evaporation systems.

ENGINEERING MANAGEMENT

E.M. 401 Credits Arr. Fall
Construction Cost Estimating and Bid Preparation (3+0)

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 3 Credits Fall
Advanced Engineering Economy (3+0)

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 3 Credits Fall
Engineering Management (3+0)

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 3 Credits Spring
Engineering Management (3+0)

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. (Prerequisites: E.M. 605, 611.)

E.M.	613	3 Credits	Spring
Engineering Management (3+0)			

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.

E.M.	621	3 Credits	Spring
	Operations Research (3+0)		

Mathematical techniques for aiding managerial decision-making. Waiting line theory, inventory models, linear programming, transportation problems, dynamic programming, PERT/CPM, machine scheduling, and simulation. Emphasis on application of techniques to actual management situations.

E.M. 623 3 Credits Fall or Spring
Computer Programming for
Engineering Managers (3+0)

A course in basic FORTRAN programming, with applications to engineering management problems.

E.M.	691	Credits Arr.	Fall
E.M.	692	Credits Arr.	Spring
	Seminar		

E.M. 693	Credits Arr.	Fall
E.M. 694	Credits Arr.	Spring
Special Topics		

ENGINEERING SCIENCE

E.S.	101	2 Credits	Fall
E.S.	102	2 Credits	Spring
	Graphics (0+6)		

Fall semester: orthographic projection, pictorial drawing, sketching, lettering, geometric construction. Charts, graphs, and diagrams.

Spring semester: descriptive geometry; graphic solution of three dimensional problems.

E.S. 111 **Fall**
Engineering Science (1+4)

Engineering problems 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)

E.S. 122 3 Credits Spring
Engineering Design (1+6)

Student engineering companies will design useful new devices and in so doing practice the techniques of creative engineering; study of need, design, and testing; cost and market analysis; scheduling, budgeting, and organization; written and oral presentation. (Prerequisite: E.S. 111 or permission of the instructor.)

E.S. 201 3 Credits Fall-Spring
Computer Techniques (2+3)

Basic computer programming, primarily in FORTRAN, with considerable applications from all fields of engineering. 2 lec., 1 lab. (Prerequisite: Math. 106 or enrollment in Math. 200.)

E.S. 208 4 Credits Spring
Mechanics (3+3)

Statics, kinematics, dynamics. Both classical and vector methods are used. Graphical solutions, work and energy, impulse and momentum, virtual work. (Prerequisites: E.S. 111, Math. 200.)

E.S. 301 3 Credits Spring-Fall
Engineering Analysis (3+0)

Application of mathematical tools to the engineering with emphasis on the mathematical formulation of typical engineering problems. Selected topics from all fields of engineering. (Prerequisite: Math. 302.)

E.S. 307 4 Credits Fall
Elements of Electrical Engineering (3+3)

Electrical fundamentals; elementary circuits and theorems; natural, forced and steady state response; principles of electronics; circuit models and system parameters; characteristics of AC and DC machines. (Prerequisite: Math. 202, or permission of the instructor.)

E.S. 308 3 Credits Spring
Instrumentation and Measurement (2+3)

Instrumentation theory and concepts digital & analog; devices; transducers, data sensing transmission; recording, and display; instrumentation system; remote sensing; hostile environmental conditions. (Prerequisite: E.S. 307.)

E.S. 331 3 Credits Fall
Mechanics of Materials (2+3)

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 4 Credits Fall
Fluid Mechanics (3+3)

Statics and dynamics of fluids. Basic equations of hydrodynamics, dimensional analysis, simple hydraulic machinery. (Prerequisites: E.S. 208, Math. 201.)

E.S. 346 3 Credits Spring
Basic Thermodynamics (3+0)

Systems, properties, processes, and cycles. Fundamental principles of thermodynamics (first and second laws), elementary applications. (Prerequisites: Math. 202, Phys. 212.)

E.S. 450 3 Credits Spring
Engineering Management and Operations (3+0)

Fundamentals of engineering economy; contracts, specifications, legal and ethical principles, management. (Prerequisites: E.S. 201 and senior standing or permission of the instructor.)

E.S. 491 Credits Arr. Fall-Spring
E.S. 492 Credits Arr. Fall-Spring
Engineering Seminar

Oral and written exposition on current engineering topics.

ENGLISH

Engl. 1 0 Credit Fall-Spring
Elementary English (3+0)

For students inadequately prepared for Engl. 111. Intensive practice in written and oral comprehension. Frequent writing assignments.

Engl. 57 3 Credits Fall
Engl. 58 3 Credits Spring
Developmental and Oral English (0+6-9)

Individual and group tutoring in oral and written English for foreign students and others with special language problems. May be taken for a total of 6 credits.

Engl. 61 2 Credits Fall-Spring
Analytical Reading (2+0)

Group and individual instruction in techniques for improving reading rate and comprehension. Development of advanced assimilative reading skills and expansion of vocabulary. Practice in critical reading skills demanded by college courses. Attention focused on study habits and library skills. *Offered only at ACC.*

Engl. 67 3 Credits Fall
Engl. 68 3 Credits Spring
Elementary Exposition (3+0)

Training in oral and written communication.

Engl. 89 3 Credits Fall-Spring
Introduction to Report Writing (3+0)

Problems of general communication; communicating technical work results; types and functions of technical reports. Basic technical report preparation including organizing and selecting data, determining scope and sequence or organization of report and report style and format. *Offered only at ACC.*

Engl. 103 3 Credits Fall-Spring
Intensive Developmental English (5+0)

An approach to problems of communication in English with special sensitivity to difference in culture and language and stylistic features which characterize informal, formal, spoken and written usage. The balance among listening, speaking, writing, and reading will be determined by the needs of the class.

Engl. 104 2 Credits Fall-Spring
Intensive Language Development (3+0)
 Concept similar to Engl. 103, except that all material used will be correlated with a specified course in which the student is concurrently enrolled, and work will be focused on language problems peculiar to that course. May be taken a second time for credit when the correlated course is different.

Engl. 105 2 Credits Fall-Spring
Intensive Language Developmental Reading (5+0)
 Intensive instruction in reading designed to encourage wide reading and vocabulary improvement and to develop the reading skills necessary for successful competition in college courses. Emphasis will be on the kinds of materials encountered by freshmen. Reading clinic help will be available, utilizing various commercial materials and mechanical devices.

Engl. 106 3 Credits Fall-Spring
Intensive College Writing (5+0)
 A writing program emphasizing the differences between speech and writing, narrative and factual reporting, with particular emphasis on the use of connectors and other organizational devices used in the various kinds of writing done in college.

Engl. 111 3 Credits Fall-Spring
Methods of Written Communication (3+0)
 Intensive instruction in written expression, including orderly thought, clear expression, and close analysis of appropriate texts. Introduction to research techniques.

Engl. 201 3 Credits Fall-Spring
 Engl. 202 3 Credits Fall-Spring
Masterpieces of World Literature (3+0)
 Masterworks of literature, studies to acquire a broad background and develop standards of literary judgment. (Prerequisite: Engl. 111.)

Engl. 211 3 Credits Fall-Spring
Advanced Composition, with Modes of Literature (3+0)
 Intensive written expression and close analysis of selected readings in methods and modes of literature. Special attention to literary techniques. Students write for weekly conferences. (Prerequisite: Engl. 111.)

Engl. 213 3 Credits Fall-Spring
Advanced Exposition (3+0)
 Intensive written expression through selected readings in appropriate fields of social and natural sciences. Students write for individual conferences. (Prerequisite: Engl. 111.)

NOTE: Neither English 211 nor English 213 is to be considered or is to be used as a prerequisite for any other course or for any particular course of study. Because both of these courses will be primarily courses in writing, either one of them will fulfill the second half of the requirement in written communication for the baccalaureate degree. A student who has taken one of these courses before declaring a major in which the other course may be considered more appropriate, or a student who changes his major from a field in which one of these courses is considered more appropriate than the other, will not be required to take the other course.

Engl. 239 3 Credits Fall-Spring
Forms and Techniques of Poetry (3+0)
 Devices, esthetic, and criticism of verse composition. Offered at Juneau-Douglas Community College and Ketchikan Community College.

Engl. 240 3 Credits Fall-Spring
Forms and Techniques of Fiction (3+0)
 Devices, esthetic, and criticism of prose composition. Offered at Juneau-Douglas Community College and Ketchikan Community College.

Engl. 254 5 Credits Fall
Canadian History and Literature (5+0)
 (Same as Hist. 254.) History and literature Canada from the 17th century to the present taught jointly by staff members from the Departments of History and English.

EDITORS NOTE: EXCEPT WHERE OTHERWISE INDICATED, PREREQUISITES FOR 300 AND 400 LEVEL COURSES ARE ENGL. 201 AND 202, OR PERMISSION OF THE INSTRUCTOR.

Engl. 314 3 Credits Fall-Spring
Research Writing (3+0)
 Technical, specialized exposition, documentation, and research. Concentration on

language, style, and audience in scholarly articles. Papers in students' fields prepared for conference. Students should have a definite project in mind before enrolling. (Prerequisite: permission of instructor.)

Engl. 318 3 Credits Fall
Modern Grammar (3+0)

The linguistic approaches to the study of grammar with emphasis on structural and transformational (generative) grammars. Recommended for all students majoring in elementary education and for all students with a teaching major or minor in English.

Engl. 321 3 Credits Fall
The Renaissance (3+0)

Poetry and prose of the sixteenth century. (Next offered in 1972.)

Engl. 322 3 Credits Spring
Neoclassical Age (3+0)

Poetry and prose from John Dryden through Samuel Johnson. (Next offered in 1973.)

Engl. 323 3 Credits Fall
Romantic Period (3+0)

Poetry and prose from the late 1700's to 1830. (Next offered in 1972.)

Engl. 324 3 Credits Spring
Victorian Period (3+0)

Poetry and non-fictional prose, 1830-1902.

Engl. 327 3 Credits Fall
Colonial American Writing (3+0)

A survey of American literary productions — history, sermons, theology, journals, diaries, autobiography, poetry, fiction, and drama — from the earliest days of colonialization to ca. 1800.

Engl. 328 3 Credits Spring
19th Century American Prose and Poetry (3+0)

A survey of American literature and related criticism from Bryant and Poe through Robinson and James, including some major novels.

Engl. 336 3 Credits Fall-Spring
20th Century American Prose (3+0)

The major fiction of Lewis, Fitzgerald, Hemingway, Faulkner, and Steinbeck.

Engl. 337 3 Credits Fall
20th Century American Poetry (3+0)

The poetry of Whitman, Dickinson, Robinson, Frost, Stevens, Roethke, and others.

Engl. 341 3 Credits Fall
20th Century British Literature (3+0)

Major achievements of modern British poetry and prose. (Next offered in 1972.)

Engl. 342 3 Credits Spring
20th Century Drama (3+0)

From Chekhov to Ionesco, the major dramatists and their achievements. (Next offered in 1974.)

Engl. 352 3 Credits Spring
The British Novel to 1900 (3+0)

Origin and development of the novel with concentration on Richardson, Fielding, Austen, E. Bronte, Dickens, Conrad, and Hardy. (Next offered in 1973.)

Engl. 381 3 Credits Fall
Craft of Poetry (3+0)

An intensive study of the forms and techniques used by poets.

Engl. 382 3 Credits Spring
Craft of Fiction (3+0)

An intensive study of the forms and techniques used by prose writers.

Engl. 383 3 Credits Fall-Spring
Craft of Drama (3+0)

An intensive study of the forms and techniques used by dramatists. A close analysis of criticism from Aristotle to Bertolt Brecht.

Engl. 413 3 Credits Spring
Old and Middle English Literature (3+0)

Old English literature in translation; representative Middle English texts exclusive of Chaucer.

Engl. 421 3 Credits Fall
Chaucer

Chaucer's poetry, with emphasis on *The Canterbury Tales*.

Engl. 423 3 Credits Fall
Elizabethan and Jacobean Drama (3+0)

Major plays of Elizabethan and Jacobean dramatists.

Engl.	424	3 Credits	Spring	Engl.	605	3 Credits	Fall
Shakespeare (3+0)				Studies in Drama (3+0)			
Major works, emphasis on the later plays and review of Shakespearian criticism.				Engl.	610	3 Credits	Spring
Engl.	426	3 Credits	Spring				
Milton (3+0)				Engl.	615	3 Credits	Fall
The poetry, selected prose, and survey of the criticism of Milton.				Engl.	620	3 Credits	Spring
Engl.	431	1-3 Credits	Fall				
Engl.	432	1-3 Credits	Spring	Engl.	625	3 Credits	Fall
Creative Writers Workshop (3+0)				Studies in Middle English Literature (3+0)			
Writing fiction and poetry. Critique of student productions.				Engl.	630	3 Credits	Spring
Engl.	441	3 Credits	Fall				
Greek Literature (3+0)				Engl.	635	3 Credits	Fall
Greek literature in English translation.				Studies in 17th Century English Literature (3+0)			
Engl.	442	3 Credits	Spring	Engl.	640	3 Credits	Spring
Roman Literature (3+0)				Studies in 18th Century English Literature (3+0)			
Roman literature in English translation.				Engl.	645	3 Credits	Fall
Engl.	444	3 Credits	Fall-Spring				
European Literature (3+0)				Engl.	650	3 Credits	Spring
Studies in major European writers and periods. (Next offered in 1973.)				Studies in the Literature of the British Romantic Period (3+0)			
Engl.	462	3 Credits	Spring	Engl.	655	3 Credits	Fall
Linguistics and Literature (3+0)				Studies in 20th Century British Literature (3+0)			
An analysis of various forms of literature, using the techniques of modern linguistics. (Prerequisite: Engl. 318 is recommended but not required.)				Engl.	661	3 Credits	Fall
Engl.	472	3 Credits	Spring				
History of English Language (3+0)				Engl.	666	3 Credits	Spring
Origin and development of the English language; modern syntax and usage.				Studies in 20th Century American Literature (3+0)			
Engl.	493	3 Credits	Fall	Engl.	670	3 Credits	Spring
Engl.	494	3 Credits	Spring				
Special Topics (3+0)				Engl.	683	3 Credits	Fall
Various subjects in American, British, and comparative literature.				Directed Reading (3+0)			
Engl.	600	3 Credits	Fall	Intensive reading for the M.F.A. candidate.			
Introduction to Graduate Studies in English (3+0)							
A survey of theories of literature, bibliographical studies, and methods of teaching English in the college or university. Required of all entering graduate students in English.							

Engl.	691	Credits Arr.	Fall
Engl.	692	Credits Arr.	Spring
Seminar			
Various topics. (Admission by arrangement.)			
Engl.	693	Credits Arr.	Fall
Engl.	694	Credits Arr.	Spring
Special Topics			
Engl.	695	Credits Arr.	Fall
Engl.	696	Credits Arr.	Spring
Research			
Engl.	697	Credits Arr.	Fall
Engl.	698	Credits Arr.	Spring
Thesis			

WRITER'S WORKSHOP

Engl.	675	Credits Arr.	Fall-Spring
Writing Drama			
Engl.	681	Credits Arr.	Fall-Spring
Writing Fiction			
Engl.	685	Credits Arr.	Fall-Spring
Writing Verse			

ENVIRONMENTAL HEALTH ENGINEERING

E.H.E.	401	3 Credits	Fall
Environmental Health Engineering Measurements (2+3)			
Theory and laboratory procedures for determining safety of water supplies, natural water quality, pollution loads, and treatment plant parameters. (Prerequisite: registration in C.E. 441.)			

E.H.E.	402	3 Credits	Spring
Engineering Management of Water Quality (3+0)			
Concepts, rationale, theory, institutions, and engineering aspects of water quality management; methods of water quality management; low-flow augmentation; instream aeration. (Prerequisite: C.E. 441 or permission of instructor.)			

E.H.E.	601	2 Credits	Spring
Water Quality Control (2+0)			
Stream and estuarine analysis, limnology of streams and lakes, ocean disposal systems, and waste management in relation to the ultimate disposal of waste products discharged into them. (Prerequisites: Biol. 341, E.H.E. 606.)			
E.H.E.	602	2 Credits	Spring
Solid Waste Management			
Planning, collecting, and disposing of refuse. Common disposal techniques of open dumping, landfilling, sanitary landfilling, composting, and incineration. Emphasis is placed on the effect of solid waste on the environment and its relationship to water, air, and land pollution. Economics and case studies are included. (Prerequisite: E.H.E. 401 or permission of instructor.)			

E.H.E.	603	2 Credits	Summer
Air Pollution			
Quantity and quality of atmospheric emissions and their effects on man and his environment. Identification and location of sources, measurement of the quality and quantity, control and regulation, economics, and standards. (Prerequisite: E.H.E. 401 or permission of instructor.)			

E.H.E.	605	3 Credits	Fall
Water Treatment (3+0)			
The theory of chemical coagulation, precipitation, ion exchange, corrosion and stabilization, filtration, and disinfection. Deviations from theory caused by the arctic climate, and/or natural waters of the north will be emphasized. (Prerequisite: graduate standing.)			

E.H.E.	606	3 Credits	Fall
Waste Treatment (3+0)			
The physical, chemical and biological methods utilized for waste treatment. Domestic and industrial wastes common to arctic and sub-arctic areas will be studied from the unit process approach. Units for individual and small populations. (Prerequisite: registration in Biol. 341.)			

E.H.E.	608	2 Credits	Spring
Environmental Health Unit Processes (0+6)			
A laboratory course in which processes studied in theory will be examined by laboratory and			

COURSE DESCRIPTIONS 231

field studies. Experiments in sedimentation — flotation, coagulation, ion exchange, activated-sludge kinetics, stream analysis, and advanced laboratory techniques. (Prerequisites: E.H.E. 605, 606 and registration in E.H.E. 601.)

E.H.E. 610 2 Credits Spring
Arctic Environmental Health Engineering Design (1+3)

Application of environmental engineering principles to the design of those facilities in arctic and sub-arctic areas. Designs in water supply, treatment, and distribution, waste collection and disposal systems, and refuse handling and disposal. (Prerequisite: registration in E.H.E. 608.)

E.H.E. 691 Credits Arr. Fall
E.H.E. 692 Credits Arr. Spring
Seminar

E.H.E. 693 Credits Arr. Fall
E.H.E. 694 Credits Arr. Spring
Special Topics

E.H.E. 697 Credits Arr. Fall
E.H.E. 698 Credits Arr. Spring
Thesis

ESKIMO

Esk. 101 5 Credits Fall
Esk. 102 5 Credits Spring
Elementary Eskimo (5+0)

Analysis of the living language with native speaker in the classroom. Learning to read and write the language. (Admission by arrangement.)

Esk. 111 5 Credits Fall
Esk. 112 5 Credits Spring
Elementary Inupiaq Eskimo (5+0)

Development of the four skills (listening comprehension, speaking, reading, and writing) with emphasis on oral work, practice in the language laboratory, basic grammar and vocabulary. (Admission by arrangement.)

Esk. 201 3 Credits Fall
Esk. 202 3 Credits Spring

Intermediate Eskimo (3+0)

Continuation of Eskimo 101/102. Includes linguistic analysis of folklore material. (Admission by arrangement.)

Esk. 387 3 Credits Fall
Esk. 388 3 Credits Spring
Bilingual Methods and Materials (3+0)

Preparation of teaching materials in Alaskan Eskimo and instruction in their proper use in bilingual classes. Fluency in native language required. Course may be repeated for credit as content changes. (Prerequisite: Permission of the instructor.)

Esk. 485 Credits Arr. Fall
Esk. 486 Credits Arr. Spring
Eskimo Language Workshop

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: Eskimo 101/102, 201/202, or speaking knowledge of Eskimo and permission of the instructor. Offered as demand warrants.)

FIRE SCIENCE

F.S. 101 3 Credits As demand warrants
F.S. 201 3 Credits As demand warrants
Field Observation and Practice

Field observation and experience with a fire protection agency. The procedures, strategy, tactics, and equipment for fire suppression. (Prerequisite: Open only to students without previous full-time paid experience in the fire service.) *Offered only at ACC.*

F.S. 111 3 Credits As demand warrants
Introduction to Fire Administration
(3+0)

An analysis of the organization and function of the fire service, including Federal, State, local and private agencies; principles of organization and management as applied to fire agencies; techniques for planning, directing, and controlling to meet community needs; basic organization and resource needs for the

successful performance of the protection, prevention, and suppression functions. *Offered only at ACC.*

**F.S. 121 3 Credits As demand warrants
Fire Suppression Systems (3+0)**

A study of sprinkler systems, standpipe systems, automatic alarm systems and fixed extinguishing systems. The installation, operation, advantages, disadvantages, regulations, watersupply requirements, testing, inspection, and maintenance of fixed systems. *Offered only at ACC.*

**F.S. 131 3 Credits As demand warrants
Construction Codes, Designs, Materials (3+0)**

Blueprint reading, sketching, and interpretation of standard symbols and drawings used in building plans. A study of building and fire codes applicable to fire prevention, and principles and practices used in various types of building construction. Fire resistance tests, standards and rating of building materials. *Offered only at ACC.*

**F.S. 151 3 Credits As demand warrants
Fire Protection Law (3+0)**

A study of the law in relation to the fire protection function; statutes, ordinances, and relevant cases. Topics covered are torts, contracts, fire prevention codes, rights and liabilities of firemen when performing their duties. Arson violations and the role of the Fire Marshall and Inspector. *Offered only at ACC.*

**F.S. 155 3 Credits As demand warrants
Fire Investigation (3+0)**

Fundamentals of investigation; crime scene search and recording; collection and preservation of physical evidence; scientific aids; modes operandi; sources of information; interviews and interrogation; follow-up and case preparation. *Offered only at ACC.*

**F.S. 211 3 Credits As demand warrants
Chemistry of Flammable Materials (2+3)**

Theories of combustion and extinguishment, including the analysis of flammable materials and the nature of extinguishing materials. The properties of matter affecting fire behavior. The

application of the laws and principles of chemistry to the use, storage, and disposal of flammable solids, liquids, gases, and dusts. The hazardous properties of the major chemical groupings and the appropriate response to that hazard. (Prerequisite: Chem. 103 or 104) *Offered only at ACC.*

**F.S. 212 3 Credits As demand warrants
Industrial, Radiation and Chemical Hazards (3+0)**

A study of hazardous processes in industry and the protection and precautions needed for personnel and property safety, with emphasis upon hazards that are related to heating plants, electrical systems, and storage. Special hazards encountered in the chemical and petroleum industries; the study of radiation hazards, effects of radiation on humans, exposure control, radiological instruments, and decontamination procedures. (Prerequisite: F.S. 211) *Offered only at ACC.*

**F.S. 222 3 Credits As demand warrants
Hydraulics and Water Supply Systems (3+0)**

Hydraulics theory, laws and formula as applied to the fire service. The mechanics of the flow of liquids. Measurement of fluid flow and methods of determining quantities of water available from a distribution system. Underwriters requirements for pumps. (Prerequisite: Math. 105 or 107 or qualifying score on Math. examination and permission of the instructor.) *Offered only at ACC.*

**F.S. 241 3 Credits As demand warrants
Insurance Grading and Rating Schedules (3+0)**

Insurance grading schedules, methods of analyzing fire hazards, the effects of fire hazards on insurance rates. Types of rating schedules, multiple line insurance, types of policies, selection, rate making settlement of claims, handling of risk and self-insurance. Methods of determining rating classification. (Prerequisite: Satisfactory score on qualifying Math. examination and permission of instructor or Math. 110.) *Offered only at ACC.*

FRENCH

Fren. 101 5 Credits Fall
Fren. 102 5 Credits Spring

Elementary French (5+0)

Development of the four skills (listening comprehension, speaking, reading, and writing) with emphasis on oral work, practice in the language laboratory, basic grammar, and vocabulary.

Fren. 105 3 Credits Fall
Fren. 106 3 Credits Spring
Fren. 107 3 Credits Spring

Elementary French (3+0)

Same course content as Fren. 101 and 102 but with the year sequence divided into three courses rather than two. (Course not offered on main campus at College.)

Fren. 111 3 Credits Fall
Fren. 112 3 Credits Spring

French for Reading Ability (3+0)

Rapid acquisition of reading knowledge with attention to needs in specialized fields. Credit applicable to degrees requiring one year of a foreign language with emphasis on reading skill.

Fren. 201 3 Credits Fall
Fren. 202 3 Credits Spring

Intermediate French (3+0)

Continuation of Fren. 102. Increasing emphasis on reading ability and cultural material. Conducted in French. (Prerequisite: Fren. 102 or two years of high school French.)

Fren. 203 2 Credits Fall
Fren. 204 2 Credits Spring

Composition and Conversation (2+0)

Supplements Fren. 201 or 202, stressing written and oral practice. Conducted in French. (Concurrent enrollment in Fren. 201 or 202 recommended. Prerequisite: Fren. 102 or equivalent.)

Fren. 301 3 Credits Fall
Fren. 302 3 Credits Spring

Advanced French (3+0)

Discussions and essays on more difficult subjects or texts; translations, stylistic exercises, special grammatical problems, systematic vocabulary building. Conducted in French. (Prerequisite: Fren. 202 or equivalent. Next offered 1972-73.)

Fren. 313 3 Credits Fall
Fren. 314 3 Credits Spring

French Civilization (3+0)

History and development of the arts and of national institutions; extensive reading and classroom discussion. Conducted in French. (Prerequisite: Fren. 202. Next offered 1973-74.)

Fren. 323 3 Credits Fall
Fren. 324 3 Credits Spring

Survey of French Literature (3+0)

Reading of texts representative of literary currents, genres, authors, epochs. Conducted in French. (Prerequisite: Fren. 202. Concurrent or previous enrollment in Fren. 301 or 302 recommended. Next offered 1971-72.)

Fren. 404 3 Credits Spring
Advanced Syntax and Oral Expression (3+0)

Continuation of Fren. 301 or 302. Analysis of difficult aspects of syntax and phonetics and practice in speaking and writing. Conducted in French. (Next offered 1973-74.)

Fren. 439 3 Credits Fall
Literature of the Classical Age (3+0)

Close study of outstanding literary works of different genres. Conducted in French. (Next offered 1972-73.)

Fren. 443 3 Credits Fall
19th Century French Literature (3+0)

French literature in the 19th century; romantisme - Realisme - naturalisme - idealisme - fin de siècle. Conducted in French. (Next offered 1971-72.)

Fren. 452 3 Credits Spring
The French Novel of the 20th Century (3+0)

Representative novelists and their works. Conducted in French. (Next offered 1972-73.)

Fren. 467 3 Credits Fall
Contemporary French Theatre (3+0)

Analysis of important plays, study of themes and dramatic techniques. Conducted in French. (Next offered 1973-74.)

Fren. 472 3 Credits Spring
French Poetry (3+0)

French poetry from the Middle Ages to the 20th century. Course conducted in French. (Next offered 1971-72.)

Fren. 493 Credits Arr. Fall
Fren. 494 Credits Arr. Spring
Special Topics

Various subjects for advanced students. (Admission by arrangement. Offered as demand warrants.)

Fren. 608 3 Credits Spring
History of the French Language (3+0)

Study of the historical evolution of French, supplemented by an analysis of documentary texts from the main literary periods. Conducted in French. (Offered as demand warrants.)

Fren. 635 3 Credits Fall
The Renaissance (3+0)

Analysis of outstanding literary works and, in general, of texts representative of the main literary forces prevalent during the 16th century. Conducted in French. (Offered as demand warrants.)

Fren. 641 3 Credits Fall
The Age of Enlightenment (3+0)

A critical study of a variety of texts, philosophical as well as literary. Conducted in French. (Offered as demand warrants.)

Fren. 646 3 Credits Spring
The 19th Century Novel (3+0)

Analysis of novels ranging from romanticism to naturalism. Conducted in French. (Offered as demand warrants.)

Fren. 691 Credits Arr. Fall
Fren. 692 Credits Arr. Spring

Seminar
Various topics. (Offered as demand warrants.)

Fren. 693 Credits Arr. Fall
Fren. 694 Credits Arr. Spring

Special Topics
Various topics (Offered as demand warrants.)

Fren. 695 Credits Arr. Fall
Fren. 696 Credits Arr. Spring

Research
(Offered as demand warrants.)

Fren. 697 Credits Arr. Fall
Fren. 698 Credits Arr. Spring

Thesis
(Offered as demand warrants.)

GEOGRAPHY

NOTE: GEOGRAPHY 105, 209, 316 AND 401 ARE NATURAL SCIENCE COURSES; ALL OTHERS ARE SOCIAL SCIENCE COURSES.

Geog. 101 3 Credits Fall
Introductory Geography (3+0)

World regions; an analysis of environment, with emphasis on the major culture realms.

Geog. 103 3 Credits Fall-Spring
World Economic Geography (3+0)

Study of the world's major economic activities: pastoralism, agriculture, fishing, forestry, mining, manufacturing, transportation and trade — and their significance in inter-regional and international development.

Geog. 105 3 Credits Spring
Elements of Physical Geography (3+0)

Description and analysis of physical environment including climate, landforms, soils, water, vegetation and their world patterns.

Geog. 202 3 Credits Spring
Geography of United States and Canada (3+0)

Regional geography of Anglo-America. Introductory systematic study of the area as a whole, followed by detailed study of the physical and cultural landscape forms, patterns, and associations of each major region in turn. Consideration of the significance of Anglo-America in current world economic and political geography.

Geog. 209 3 Credits Fall
Fundamentals of Meteorology (3+0)

(Same as Phys. 209.)

An introductory course in meteorology for the non-specialist. Aviation weather will be included. (Prerequisite: High school algebra or permission of the instructor.)

Geog. 301 3 Credits Spring
Geographic Field Research Techniques

Theory and application of geographic methods of conducting field investigations. Collection, analysis, synthesis, and interpretation of data concerning the natural and man-made features of regional environments. Preparation and presentation of reports of findings and conclusions.

Geog. 302 3 Credits Spring
Geography of Alaska (3+0)

Regional, physical, and economic geography of Alaska.

Geog. 305 3 Credits Fall
Geography of Europe
(except U.S.S.R.) (3+0)

Regional, physical, economic and cultural geography of Europe, except U.S.S.R. (Prerequisite: junior standing or permission of the instructor.)

Geog. 306 3 Credits Spring
Geography of the Soviet Union
(3+0)

Regional, physical, and cultural geography of the U.S.S.R. (Prerequisite: junior standing or permission of the instructor.)

Geog. 309 3 Credits Fall-Spring
Cartography (1+6)

Graphic techniques for presenting geographic data through the construction of maps, projections and charts. (Admission by arrangement.)

Geog. 311 3 Credits Fall-Spring
Geography of Asia (3+0)

Regional geography of Asia, exclusive of the Soviet Union. A study of the physical framework, natural resources, peoples, major economic activities and characteristic landscapes of the major regions of Japan, China, Southeast Asia, India-Pakistan, and the Asiatic countries of the Middle East. (Prerequisite: junior standing or permission of the instructor.)

Geog. 315 3 Credits Fall
Geography of Africa

Physical and cultural geography of Africa, by regions. Significance of Africa in current world cultural, economic and political geography. Major emphasis on regions south of the Sahara.

Geog. 316 3 Credits Spring
Pleistocene Environment (3+0)

Principles of Paleogeography and their application to the environments of the ice age and post-glacial times. (Prerequisite: Geog. 105 or permission of the instructor.)

Geog. 327 3 Credits Fall
Cold Lands (3+0)

Climate, natural resources, and man's adjustment to environment in cold lands. (Prerequisite: Permission of the instructor.)

Geog. 401 3 Credits Fall-Spring
Weather and Climate (3+0)

Introduction to the study of weather and classification of climates. (Prerequisite: Permission of the instructor.)

Geog. 402 3 Credits Spring
Man and Nature (3+0)

Detailed analysis of the interrelationships of man and environment with particular emphasis on the Arctic. (Admission by arrangement.)

Geog. 404 3 Credits Fall
Urban Geography

A world survey of urbanization with particular emphasis on the accelerating urban revolution in modern times. Conditions favoring the rise of cities: locational and site factors; regional and interregional resource availability; human factors. Changing functions and patterns of urban areas. National and international problems inherent in trends toward a predominantly urbanized economy and culture. Implications of urbanization in Alaska.

Geog. 405 3 Credits Fall
Political Geography

Geographical analysis of the evolution, structure, internal coherence, and sources of strength of individual nation states, with emphasis on nations of the Pacific realm and Arctic periphery. Consideration of regional blocs, spheres of influence, and potentialities for international cooperation.

Geog. 491 Credits Arr. Fall
Geog. 492 Credits Arr. Spring
Seminar

Selected topics in geography. (Admission by arrangement.)

Geog. 493 Credits Arr. Fall
 Geog. 494 Credits Arr. Spring
Special Topics
 Various subjects studied. (Admission by arrangement.)

GEOLOGY

Geol. 101 4 Credits Fall
General Geology (3+3)

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 4 Credits Spring
Historical Geology (3+3)

An introduction to geological principles and the development of the geologic time scale, the stratigraphic record and its interpretation, geosynclinal theories and plate tectonics, the fossil record and its utilization, biostratigraphy, and the evolution of the North American continent through geologic time. Laboratory work includes the reconstruction of geologic history of various regions through the use of geologic maps and structure sections and offers an introduction to invertebrate fossils. (Prerequisite: Geol. 101 or 111.)

Geol. 104 3 Credits To be Arranged
Elements of Geology (3+0)

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. 111 4 Credits Fall
Physical Geology (3+3)

An introduction to minerals and rocks, their formation and classification. Surficial and crustal geologic processes and their effects on landforms, rocks and rock structures. Laboratory emphasis on study and classification of mineral and rock hand specimens with an introduction to topographic and geologic map interpretation. Lecture

combined with Geology 101, but laboratory separately scheduled. (Prerequisite: science and engineering majors, or permission of instructor)

Geol. 213 4 Credits Fall
Mineralogy (2+6)

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. (Prerequisites: Math. 106, 200; Chem. 101, 102.)

Geol. 214 3 Credits Spring
Optical Mineralogy (2+3)

Theory and application of optical methods as applied to identification of minerals and rocks. Introduction to the use of the petrographic microscope and familiarization with the optical characteristics of common rock forming minerals. (Prerequisites: Geol. 111, 213.)

Geol. 304 3 Credits Fall
Geomorphology (3+0)

Study of landforms and the processes which create and modify them. (Prerequisite: Geol. 102.)

Geol. 314 3 Credits Spring
Structural Geology (2+3)

Origin and interpretation of primary and secondary geologic structures. Graphical solution of structural problems. (Prerequisite: Geol. 111 or 101 by permission of the instructor, recommended Geol. 102, Phys. 211 or admission by arrangement.)

Geol. 315 5 Credits Fall
Petrology (3+6)

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 sections. (Prerequisites: Geol. 213, 214.)

Geol. 321 3 Credits Fall
Principles of Sedimentation (2+3)

Broad survey of sediments, including origin, classification, composition, transportation, deposition, and diagenesis. Laboratory instruction in methods of textural and compositional analysis. (Prerequisite: Geol. 213 or permission of instructor.)

Geol. 350 2 Credits Spring
Geologic Field Methods (1+3)

An introduction to geologic field techniques as a prerequisite to Field Geology (Geol. 351). Geologic field mapping techniques, equipment and logistics, and the presentation of field data and report preparation. (Prerequisites: junior standing in geology.)

Geol. 351 6 Credits Summer
Field Geology

Practical experience in the procedures employed in collecting and presenting the basic data obtained from the field. Includes field mapping of stratigraphic and structural problems on topographic maps, aerial photographs, plane tables maps, and presentation of results in a professional report and finished geologic map. Students pay own transportation, subsistence, and course tuition fee. Entrance by preregistration only. (Prerequisites: junior standing in geology, Geol. 350 or equivalent, and a course in surveying.)

Geol. 362 3 Credits Spring
Engineering Geology (3+0)

Application of geologic principles to engineering site exploration, foundation work and structural design. Rocks and soils; their properties and use as construction material. Special emphasis on the arctic environment. (Prerequisites: Geol. 111, 314.)

Geol. 401 4 Credits Fall
Invertebrate Paleontology (3+3)

Study of the invertebrate phyla with fossil records. Emphasis on soft-part anatomy and classification, followed by study of hard-part anatomy of fossil groups and their classification. Recurrent emphasis on relevant biologic principles. Laboratory study on fossil materials, including a term project on an Alaskan fossil collection. (Prerequisites: Geol. 101 or 111 or by permission of instructor, Biol. 305 recommended.)

Geol. 402 3 Credits Spring
Stratigraphic Paleontology (2+3)

Development of the basic principles of physical and biological stratigraphy; growth of the geologic time scale, organic evolution, Paleogeology, biogeography, and the stratigraphic synthesis. Laboratory emphasis on recognition of the tectonic framework of sedimentation through

the study of selected rock suites and an introduction to subsurface stratigraphic techniques. (Prerequisites: Geol. 111 or 101, Geol. 401; recommended Geol. 315.)

Geol. 403 3 Credits Fall
Environmental Geology (3+0)

Study of the interrelationships between the geologic environment and the human community. Earth resources, geologic hazards, land-use planning, waste disposal, and pollution control. (Prerequisites: Geol. 101 or 111 and permission of the instructor.)

Geol. 404 3 Credits Spring
Economic Geology (2+3)

The application of geology to the exploration, valuation and exploitation of mineral deposits. (Prerequisites: Geol. 213, 214, 314 or permission of the instructor.)

Geol. 408 3 Credits Spring
Map and Air Photo Interpretation (1+6)

Use of topographic maps, geologic maps, and aerial photographs in the analysis of geologic structures and landforms. (Prerequisite: Geol. 304.)

Geol. 410 2 Credits Spring
Introduction to Clay and Shale Petrology (2+0)

A brief survey of clay mineralogy followed by a general study of shales, their origin, composition, geologic significance, and industrial applications. (Prerequisites: Geol. 213, 321.)

Geol. 411 3 Credits Fall
General Oceanography (3+0)
 (Same as OCN 411.)

Description of the oceans and ocean processes; interrelationship of disciplinary sciences to the field; historical facts of oceanography, modern developments and trends in the field. (Prerequisite: senior or graduate standing in a disciplinary science, mathematics, or engineering.)

Geol. 412 3 Credits Fall-Spring
Geology of Alaska (2+3)

Study and interpretation of the geology of Alaska. (Field trips) (Prerequisites: Geol. 102, 304, 314.) Offered as demand warrants.

Geol. 413 3 Credits Fall
Vertebrate Paleontology (2+3)
 Systematic study of the fossil vertebrate with emphasis on evolution, morphology, and ecology. (Prerequisite: Geol. 102.)

Geol. 416 3 Credits Fall
Introduction to Geochemistry (3+0)
 Introduction to chemistry of the earth. (Prerequisites: Chem. 101, 102.)

Geol. 418 3 Credits Spring
Introduction to Geophysics (3+0)
 Introduction to physics of the earth including figure of the earth, the gravity field, seismicity, geomagnetism, heat flow, and paleogeophysics. (Prerequisites: Math. 201 and Physics 212.)

Geol. 421 3 Credits Fall
Principles of Seismology (3+0)
 Historical introduction, observational seismology, seismometry, simple elastic wave propagation. (Admission by arrangement.)

Geol. 424 3 Credits Spring
Ground Water Hydrology (3+0)
 Occurrence and distribution of ground water; geologic controls over its quality and amount of yield; methods of exploration and development. (Prerequisites: Geol. 111 or 101 by permission of the instructor, Geol. 314.)

Geol. 462 3 Credits Spring
Glacial and Pleistocene Geology (3+0)
 Study of the geologic effects of glaciation and other environmental modifications resulting from Pleistocene climatic changes. Chronology of the Pleistocene epoch and techniques used in its reconstruction. (Prerequisite: Geol. 304.)

Geol. 491 Credits Arr. Fall
Geol. 492 Credits Arr. Spring
Seminar in Geology
 Various subjects studied. (Admission by arrangement.)

Geol. 493 Credits Arr. Fall
Geol. 494 Credits Arr. Spring
Special Topics — Problems in Various Fields of Geology

Geology problems of the student's choice approved by instructor. Transportation expenses met by student. No more than three credits allowed per semester. (Admission by arrangement.)

Geol. 603 3 Credits Fall
Geol. 604 3 Credits Spring

Introduction to Geophysics (3+0)
 (Same as Physics 603, 604) A survey of selected topics in the planetary sciences, including introductory material in each of the major research subject areas in geophysics. 603 covers earth science and 604 covers atmospheric and space science.

Geol. 605 3 Credits Fall
Glaciology I (2+3)

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. Prerequisites: Math. 202, Phys. 212, or by permission of the instructor.)

Geol. 606 3 Credits Spring
Glaciology II (2+3)

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. Prerequisite: Geol. 605, or by arrangement.)

Geol. 608 3 Credits Fall
Pleistocene Environments (3+0)

Physical and biological aspects of Pleistocene climatic changes and related events. Faculty panel representing geology, geography, biology, anthropology, and soil science. (Admission by arrangement.)

Geol. 610 3 Credits Fall
Theories of Ore Deposition (3+0)

Theories pertaining to the origin, concentration, transport, and deposition of ore elements. (Prerequisites: Geol. 404, 416 or permission of the instructor. Offered as demand warrants.)

Geol. 613 3 Credits Spring
Marine Geology (3+0)

(Same as OCN 613.) Survey of marine geology, structure of ocean basins and continental margins, chemical and physical properties of

marine sediments, geological processes in the oceans. (Prerequisite: senior or graduate standing in geology or appropriate inter-disciplinary programs, or by permission of the instructor.)

Geol. 620 3 Credits Fall
Introduction to Physical Oceanography (3+0)

(Same as OCN 620 and Phys. 620.) Physical description of the sea, physical properties of sea water, methods and measurements, boundary processes, currents, tides and waves, regional oceanography. (Prerequisite: science or engineering degree, or permission of the instructor.)

Geol. 622 4 Credits Fall
Advanced Metamorphic Petrology (2+6)
 (Prerequisites: Geol. 314, 315. Next offered in 1972.)

Geol. 623 4 Credits Fall
Advanced Petrology of the Intrusive Igneous Rocks (2+2)
 Geochemistry and petrology of igneous rocks which have crystallized at various depths in the earth's crust or mantle. (Prerequisites: Geol. 314, 315. Next offered 1971.)

Geol. 624 4 Credits Fall
Advanced Petrology of the Volcanic Rocks (2+6)
 (Prerequisites: Geol. 314, 315. Next offered in 1973.)

Geol. 627 3 Credits Spring
Geotectonics (3+0)
 Large scale structural features, time and place in orogenesis, theories of orogenesis. (Prerequisite: Geol. 314. Offered as demand warrants.)

Geol. 628 3 Credits Spring
Structural Petrology (2+3)
 Structural petrology, mechanisms of folding, theoretical basis for mechanical behavior of rocks. (Prerequisites: Geol. 314, 315. Offered as demand warrants.)

Geol. 629 3 Credits Spring
Crystal Chemistry (3+0)
 This course deals with the crystal chemistry of minerals. The course will include: a discussion of chemical bonding in solids, calculation of

lattice energies, a systematic discussion of the various crystallo-chemical groups, classification of phase transformation in solids, defect crystals, an introductory treatment of the band theory of solids. (Prerequisites: physical chemistry, Geol. 416 or permission of the instructor. Offered alternate years. Next offered Spring 1973.)

Geol. 630 2 Credits Fall
Phase Equilibria of Oxide Systems (2+0)
 This course will treat the phase equilibria of important unary, binary, ternary, and quaternary oxide systems. A portion of the course will be devoted to a discussion of the heterogeneous equilibria of oxide systems under conditions of varying partial pressure of oxygen. The course will conclude with a general treatment of p-t-x systems. (Prerequisites: physical chemistry, Geol. 416 or permission of the instructor. Offered alternate years. Next offered Fall 1972.)

Geol. 631 3 Credits Fall
Marine Geochemistry (3+0)
 Study of chemistry of elements in lithosphere, atmosphere, and hydrosphere with emphasis on the marine environment, and importance of glaciers in geochemical processes. (Prerequisites: Geol. 416, Chem. 332, Phys. 212, Math. 202, or permission of the instructor.)

Geol. 632 3 Credits Spring
Thermodynamics of Geologic Systems (3+0)
 Demonstrates the use of thermodynamic calculations based upon experimental data from geologically important systems as a means of interpreting natural mineral assemblages. (Prerequisites: Geol. 416, Chem. 332, or permission of the instructor. Offered alternate years. Next offered Spring 1972.)

Geol. 634 2 Credits Spring
Phase Equilibria of Volatile-Containing Oxide Systems (2+0)
 Treats the phase equilibria of important ternary and quaternary systems in which a volatile phase is present. A portion of the course will be devoted to the phase equilibria of sea water and marine evaporites. (Prerequisites: Chem. 331, Geol. 416, Geol. 630, consent of instructor. Offered alternate years; next offered 1973.)

Geol. 660 3 Credits Fall-Spring
Theoretical Geophysics (3+0)

(Same as Phys. 660.) Selected topics in theoretical geophysics, mainly in solid earth physics, seismology, and geomagnetism. (Admission by arrangement. Offered as demand warrants.)

Geol. 693 Credits Arr. Fall
Geol. 694 Credits Arr. Spring
Special Topics
 Research in various fields.

Geol. 697 Credits Arr. Fall
Geol. 698 Credits Arr. Spring
Thesis or Dissertation

Transportation expenses met by the student. (Admission by arrangement.)

GERMAN

Ger. 101 5 Credits Fall
Ger. 102 5 Credits Spring
Elementary German (5+0)

Development of the four skills (listening comprehension, speaking, reading, and writing) with emphasis on oral work, practice in the language laboratory, basic grammar and vocabulary.

Ger. 105 3 Credits Fall
Ger. 106 3 Credits Spring
Ger. 107 3 Credits Spring
Elementary German (3+0)

Same course content as Ger. 101 and 102 but with the year sequence divided into three courses rather than two. (Course not offered on main campus at College.)

Ger. 111 3 Credits Fall
Ger. 112 3 Credits Spring
German for Reading Ability (3+0)

Rapid acquisition of reading knowledge with attention to needs in specialized fields. Credit applicable to degrees requiring one year of a foreign language with emphasis on reading skill.

Ger. 201 3 Credits Fall
Ger. 202 3 Credits Spring
Intermediate German (3+0)

Continuation of Ger. 102. Increasing emphasis on reading ability and cultural material.

Conducted in German. (Prerequisite: Ger. 102 or two years of high school German.)

Ger. 203 2 Credits Fall
Ger. 204 2 Credits Spring
Composition and Conversation (2+0)

Supplements Ger. 201 or 202, stressing written and oral practice. Conducted in German. (Concurrent enrollment in Ger. 201 or 202 recommended. Prerequisite: Ger. 102 or equivalent.)

Ger. 301 3 Credits Fall
Ger. 302 3 Credits Spring
Advanced German (3+0)

Discussions and essays on more difficult subjects for texts. Translations stylistic exercises, special grammatical problems, systematic vocabulary building. Conducted in German. (Prerequisite: Ger. 202 or equivalent. Next offered 1972-73.)

Ger. 313 3 Credits Fall
Ger. 314 3 Credits Spring
German Civilization (3+0)

History, development of the arts and of national institutions; extensive reading and classroom discussion. Conducted in German. (Prerequisite: Ger. 202. Next offered 1973-74.)

Ger. 321 3 Credits Fall
Ger. 322 3 Credits Spring
Studies in German Literature

Choice of authors, genres or periods of German literature for intensive study. Conducted in German. Students may repeat course for credit when topic varies. (Prerequisite: Ger. 202 or equivalent.)

Ger. 323 3 Credits Fall
Ger. 324 3 Credits Spring
Survey of German Literature (3+0)

Reading of texts representative of literary currents, genres, authors, epochs. Conducted in German. (Prerequisite: Ger. 202. Next offered 1971-72.)

Ger. 404 3 Credits Spring
Advanced Syntax and Oral Expression (3+0)

Continuation of Ger. 301 or 302. Analysis of difficult aspects of syntax and phonetics and practice in speaking and writing. Conducted in German. (Next offered 1973.)

COURSE DESCRIPTIONS 241

Ger. 443 3 Credits Fall
19th Century German Literature (3+0)
 Primarily the works of Keller, Storm, Meyer, Stifter, Raabe, Fontane, Heine, Hebbel, and Grillparzer. Conducted in German. (Next offered 1973-74.)

Ger. 445 3 Credits Fall
Classicism (3+0)
 A study of the Classic period in German literature, including works by Lessing, Goethe, and Schiller. Conducted in German (Next offered 1971-72.)

Ger. 452 3 Credits Spring
20th Century Novel (3+0)
 Primarily the works of Hesse, Mann, Kafka. Conducted in German. (Next offered 1973-74.)

Ger. 493 Credits Arr. Fall
Ger. 494 Credits Arr. Spring
Special Topics
 Various subjects for advanced students. (Admission by arrangement. Offered as demand warrants.)

HISTORY

Hist. 101 3 Credits Fall
Western Civilization (3+0)
 The origins and major political, economic, social, and intellectual developments of western civilization to 1500.

Hist. 102 3 Credits Spring
Western Civilization (3+0)
 Major political, economic, social, and intellectual developments of western civilization since 1500.

Hist. 121 3 Credits Fall
East Asian Civilization (3+0)
 The Great Tradition. Origin and development of the civilizations of China and Japan from the beginning to 1600 with emphasis on traditional social, political and cultural institutions.

Hist. 122 3 Credits Spring
East Asian Civilization (3+0)
 The Modern Transformation. East Asia from 1600 to the present with emphasis on patterns

of social cohesion, transition, and revolutionary change.

Hist. 131 3 Credits Fall
Hist. 132 3 Credits Spring
History of the U.S. (3+0)

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. 221 3 Credits Fall
Hist. 222 3 Credits Spring
English History (3+0)

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 3 Credits As demand warrants
Ancient History (3+0)
 Political, social, economic, and cultural development of the ancient Near East, Greece, and Rome.

Hist. 230 3 Credits Spring
Modern China (3+0) (alternate years)
 From 1800 to the present, with emphasis on rebellion, reform, revolution and resistance to change.

Hist. 231 3 Credits Spring
Modern Japan (3+0) (alternate years)
 From 1600 to the present with an examination of change within tradition, rise to power, and modern dilemma.

Hist. 235 3 Credits Fall-Spring
History of the American Indian:
1865 to Present (3+0)

A general history of the American Indian, focusing on his social, political and economic reaction to the tide of westward settlement. Emphasis on the history of the trans-Mississippi west, with some attention to the Alaskan native. *Offered only at ACC.*

- Hist. 240** 3 Credits Fall
History of the Afro-American Peoples (3+0)
The African background; slave experience; social and cultural experience since emancipation; race relations.
- Hist. 254** 5 Credits Fall
Canadian History and Literature (5+0)
A joint course given by a history and an English professor on the history and literature of Canada (See Engl. 254) from the 17th century to present.
- Hist. 261** 3 Credits Fall
Russian History (3+0)
Origins of Russia, Kievan Russia. The Mongol era and the rise of Muscovy. Modern Russia to the twentieth century.
- Hist. 302** 3 Credits Fall
The Old Regime, the Enlightenment and the French Revolution (3+0)
The political, social, and economic structure of the old regime; intellectual developments in the eighteenth century; the revolution and the Napoleonic period; influence of France upon European development in the eighteenth century. (Prerequisite: Hist. 102.)
- Hist. 305** 3 Credits Fall-Spring
Europe: 1815 to 1870 (3+0)
Political, economic, social, and intellectual history. Development of industrial revolution, romantic movement, and unification of Germany and Italy. (Prerequisite: Hist. 102. Offered in alternate years.)
- Hist. 306** 3 Credits Fall-Spring
Europe: 1870 to 1914 (3+0)
Continuation of Hist. 305. The rise of socialism, imperialism, outbreak of World War I. (Prerequisite: Hist. 101, 102. Offered in alternate years.)
- Hist. 315** 3 Credits Fall-Spring
Contemporary Europe (3+0)
Europe from 1914 to the present. (Prerequisites: Hist. 101, 102, or admission by arrangement. Offered in alternate years)
- Hist. 334** 3 Credits As demand warrants
Diplomatic History of the United States (3+0)
A survey of foreign relations of the United States from 1775 to the present.
- Hist. 341** 3 Credits Fall
History of Alaska (3+0)
The Russian background; acquisition, settlement and development of Alaska as an American territory and the 49th State. (Prerequisite: junior standing)
- Hist. 344** 3 Credits Fall
Twentieth Century Russia (3+0)
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. (Prerequisites: Hist. 101, 102. Offered in alternate years.)
- Hist. 375** 3 Credits Fall-Spring
History of the Northern Pacific (3+0)
The historical development and inter-relationships and problems of the North Pacific (Siberia, Canada, Alaska) from the 18th century to the present.
- Hist. 380** 3 Credits Spring
Polar Exploration and its Literature (3+0)
Western nations from A.D. 870 to the present and a consideration of the historical sources of this effort.
- Hist. 416** 3 Credits Fall-Spring
The Renaissance (3+0)
Political, social, economic, and cultural developments in the age of the Renaissance. (Prerequisites: Hist. 101, 102. Offered in alternate years.)
- Hist. 417** 3 Credits Fall-Spring
The Reformation (3+0)
The Protestant and Catholic reformations. Political, economic, social, and religious conflicts, 1500-1600. (Prerequisites: Hist. 101, 102. Offered in alternate years.)
- Hist. 430** 3 Credits Fall-Spring
American Colonial History (3+0)
Early America; European settlement; economic and social development of the American

community, establishment of political independence. (Prerequisites: Hist. 131, 132. Offered in alternate years.)

Hist. 435 3 Credits Fall-Spring
Civil War and Reconstruction (3+0)

Political, economic, social, and diplomatic history from 1860-77; disruption and re-establishment of the Union. (Prerequisites: Hist. 131, 132. Offered in alternate years.)

Hist. 440 3 Credits Fall-Spring
The Westward Movement (3+0)

Westward migration; establishment of new states and political institutions. Influences of the West. (Prerequisites: Hist. 131, 132. Offered in alternate years.)

Hist. 450 3 Credits Fall-Spring
Twentieth Century America (3+0)

United States from the progressive movement to the present day, with emphasis on domestic developments. (Prerequisites: Hist. 131, 132. Offered in alternate years.)

Hist. 461 3 Credits Spring
American Intellectual and Cultural History (3+0)

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. (Prerequisites: Hist. 131, 132. Offered in alternate years.)

Hist. 475 3 Credits Fall
Introduction to Historical Method (3+0)

Methods of historical research. Preparation and criticism of student research papers on selected topics. (Admission by arrangement.)

Hist. 491 Arranged Fall
Hist. 492 Arranged Spring
Seminar in Northern Studies

An interdisciplinary seminar focusing on topics relating to the North with emphasis on the physical sciences, the peoples and the socio-economic and political aspects of the area. Specialists in the various fields will assign readings and conduct discussions.

Hist. 493 Credits Arr. Fall

Hist. 494 Credits Arr. Spring
Special Topics

Hist. 601 3 Credits Fall-Spring
Historiography (3+0)

History of historical writing. Study and analysis of works of selected major historians.

Hist. 691 3 Credits Fall-Spring
Seminar in European History (3+0)

Hist. 692 3 Credits Fall-Spring
Seminar in American History (3+0)

Hist. 693 Credits Arr. Fall
Hist. 694 Credits Arr. Spring
Special Topics (3+0)

Hist. 697 Credits Arr. Fall
Hist. 698 Thesis

HOME ECONOMICS

H.E. 102 3 Credits Fall-Spring
Meal Management (2+3)

Planning, buying, preparing, and serving meals. Emphasis on management, cost, nutrition.

H.E. 110 2 Credits Fall
Modern Meals (1+3)

Planning and preparation of quick, attractive and nutritious meals for today's living. Includes outdoor cooking and use of convenience foods. Open to men and women. (Cannot be substituted for H.E. 102)

H.E. 113 3 Credits Fall
Clothing Construction and Selection I (2+3)

Fundamental sewing processes in garment construction, using modern techniques. Clothing selection and wardrobe study, and the psychological and social significance.

H.E. 211 3 Credits Fall
Textiles (2+3)

Identification, structure, selection, use and care of fabrics.

H.E. 215 2 Credits As demand warrants
Weaving (0+6)
Same as Art 215.

The study of various weaving techniques, including the traditional loom weaving, different

kinds of primitive weaving (backstrap loom, Inko loom, Hungarian loom, etc.), tapestry weaving, macrame, and spinning and dyeing yarns. The emphasis will be on individual creativity and experimentation within these techniques.

H.E. 231 3 Credits Fall
Interior Design (3+0)

Principles of design and color as related to planning and decorating a home.

H.E. 236 3 Credits Fall-Spring
Marriage and Family Life (3+0)

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 3 Credits Fall-Spring
Home Management: Theory and Practicum (2+3)

Work simplification, time, energy, money management and their application in the home.

H.E. 245 3 Credits Fall-Spring
Child Development (2+3)

(Same as Psy. 245) Theory and laboratory of human mental, emotional, social, and physical development. (Prerequisites: Psy. 101, 45 semester hours, and permission of the instructor)

H.E. 302 3 Credits Spring
Experimental Foods (2+3)

Application of scientific principles to the solution of problems in food preparation. (Prerequisite: Biol. 105-106 and Chem. 103-104)

H.E. 304 3 Credits Fall-Spring
Nutrition (3+0)

Fundamental principles of human nutrition and their application to daily living.

H.E. 312 3 Credits Spring
Clothing Construction and Selection II (2+3)

Advanced clothing problems in selection, fitting, construction, fabrics, and design; modern construction techniques. (Prerequisite: H.E. 113 or admission by arrangement)

H.E. 401 3 Credits Fall-Spring
Consumer Education (3+0)

Problems of consumers in purchasing goods and services to satisfy wants and needs. Evaluation of information sources for consumer buyers; analysis of programs for consumer protection.

H.E. 402 3 Credits Spring
Nursery School Laboratory (1+6)

Observation, experience, participation in the guidance of young children. (Prerequisite: H.E. 351 or Psy. 351 and permission of the instructor)

H.E. 407 3 Credits Spring
Parent Education (3+0)

The role of parents in child growth and development. Past and present methods of child rearing.

H.E. 412 3 Credits Fall-Spring
Clothing Problems (2+3)

Advanced work in clothing selection and construction with emphasis on identifying and solving individual clothing problems. (Prerequisite: H.E. 312)

H.E. 413 3 Credits As demand warrants
Pattern Drafting and Draping (2+3)

Drafting of flat patterns and draping of fabrics; construction of student-designed garments. (Prerequisite: H.E. 312)

H.E. 425 3 Credits Spring
Dynamics of Family Interaction (3+0)

Person-centered study of many factors affecting interpersonal relationships in the family, including communication, values, goals, roles, personality, sex, children. Marital relationships described in popular fiction and actual case studies will be analyzed. (Prerequisite: Psy. 101)

H.E. 441 3 Credits Fall
Family Health (3+0)

Family and community health; home nursing, first aid. (Offered in alternate years)

H.E. 442 3 Credits Fall-Spring
Household Equipment (3+0)

Selection, operation, care and efficient arrangement of household equipment for family use. (Recommended prerequisite: H.E. 241. Offered as demand warrants)

H.E. 446 3 Credits Spring
House Planning and Furnishing (1+6)

Planning, building, furnishing, decorating a home. Field trips to homes. (Offered as demand warrants.)

H.E. 491 Credits Arr. Fall
H.E. 492 Credits Arr. Spring
Seminar (1+0)

Selected topics in home economics.

H.E. 493 Credits Arr. Fall
H.E. 494 Credits Arr. Spring
Special Topics (1+0)

Various subjects studied, principally through directed reading and discussions. (Admission by arrangement.)

HUMANITIES

Hum. 211 3 Credits Fall
Hum. 212 3 Credits Spring
Humanities (3+0)

Integrated introduction to the fundamental principles of literature, music, arts, and philosophy. (Prerequisites: Engl. 101-102, Hist. 101-102 recommended. Sophomore standing. Offered only at ACC.)

JAPANESE

Jap. 101 5 Credits Fall
Jap. 102 5 Credits Spring
Elementary Japanese (5+0)

Development of the four skills (listening comprehension, speaking, reading, and writing) with emphasis on oral work, practice in the language laboratory, basic grammar and vocabulary. Romanized Japanese text for grammar and conversation and standard Japanese text for reading.

Jap. 201 3 Credits Fall
Jap. 202 3 Credits Spring
Intermediate Japanese (3+0)

Continuation of Jap. 102 with increasing emphasis on reading ability and cultural material. Standard Japanese texts for reading including selections from modern Japanese literature. (Prerequisite: Jap. 102 or equivalent.)

JOURNALISM

Jour. 100 1 Credit Spring
Current Affairs (1+0)

Study and discussion of current events, news stories, magazine articles and book reviews. An analysis of news events, trends and prevailing ideas and attitudes in the nation as viewed through the mass media.

Jour. 201 3 Credits Fall-Spring
Introduction to Journalism (2+3)

Structure of news stories, various news leads and feature stories; gathering and evaluating information for simple news stories; writing stories. (Prerequisite: Engl. 102 or admission by arrangement. Ability to type is essential.)

Jour. 203 3 Credits Fall-Spring
Basic Photography (2+3)

Theory and practice of picture-taking and processing; emphasis on the camera in the modern press.

Jour. 206 3 Credits Fall-Spring
Advanced Reporting

Emphasis on writing more complex news stories; depth features, investigative and interpretive reporting. Practical assignments in cooperation with Polar Star and Fairbanks Daily News-Miner. (Prerequisite: Jour. 201.)

Jour. 212 3 Credits Spring
Editing (3+0)

Editing copy, writing headlines; newspaper layout; general study of mechanical, circulation, editorial and advertising departments. (Prerequisite: Jour. 201.)

Jour. 303 3 Credits Fall-Spring
Advanced Photography (1+3)

Continuation of the basic course, with emphasis on the picture story and free lance photography.

Jour. 311 3 Credits Fall-Spring
Magazine Article Writing (3+0)

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. 320 3 Credits Fall
Journalism in Perspective (3+0)

A survey of the history and principles of journalism examined in the light of today's problems and future goals.

Jour. 324 3 Credits Fall
Newspaper Production, Advertising,
and Typography (1+6)

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. 403 3 Credits Fall-Spring
Cinematography (2+2)

Filming and editing news and documentary movies for television and educational purposes. (Prerequisite: Jour. 203 or instructor's permission.)

Jour. 411 3 Credits Fall-Spring
Advanced Magazine Article
Writing (3+0)

Study and practice in writing advanced articles for publication in national and international media. (Prerequisite: Permission of instructor.)

Jour. 412 3 Credits Spring
Advanced Editing (2+3)

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. 413 3 Credits Spring
Law of the Press (3+0)

Study of the laws and regulations that govern the mass media; emphasis is placed on libel, censorship and copyright. (Prerequisite: Jour. 201 or permission of the instructor.)

Jour. 420 3 Credits As demand warrants
Biography (3+0)

Research and writing of biography and autobiography.

Jour. 493 Credits Arr. Fall

Jour. 494 Credits Arr. Spring
Special Topics

Various subjects in journalism. (Offered as demand warrants. Admission by arrangement.)

Jour. 691 Credits Arr. Credits Arranged
Jour. 692 Credits Arr. Credits Arranged

Journalism Seminar

Jour. 693 Credits Arr. Fall

Jour. 694 Credits Arr. Spring

Special Topics

Various subjects principally by directed study, discussion and research.

Jour. 695 Credits Arr. Fall

Jour. 696 Credits Arr. Spring

Research

Jour. 697 Credits Arr. Fall

Jour. 698 Credits Arr. Spring

Thesis

LAND RESOURCES

Land Res. 101 3 Credits Spring
Conservation of Natural
Resources (3+0)

Conservation of renewable and non-renewable natural resources, emphasizing the United States situation.

Land Res. 311 3 Credits Spring
Soils (2+3)

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 1971-1972.)

Land Res. 414 3 Credits Spring
Principles of Outdoor Recreation
Management (3+0)

Theories, practices, economics and problems fundamental to the use of land and related natural resources for recreation; relationship of wildland recreation in regional development. (Prerequisite: junior standing in biology or natural resources or permission of the instructor.)

Land Res. 451 3 Credits Fall
Forest Influences (3+0)

Relationships between climate, soil, water and forest vegetation. Elements of wildland

COURSE DESCRIPTIONS 247

hydrology, soil erosion control and water yield.
(Prerequisite: Permission of instructor.)

Land Res.	491	Credits Arr.	Fall
Land Res.	492	Credits Arr.	Spring
	Seminar		

Topics in land resources. (Offered as demand warrants.)

Land Res.	493	Credits Arr.	Fall
Land Res.	494	Credits Arr.	Spring
	Special Topics		

Land Res.	654	3 Credits	Fall
	Biometeorology (3+0)		

Solar radiation, energy balance relationships, and disposal of incident energy at the earth's surface; physical environment in relation to biological activity of plants and animals. Concepts emphasized. (Prerequisites: Calculus, physics, biology or permission of the instructor. L.R. 451 recommended.) Offered alternate years; next offered 1971-1972.

Land Res.	691	Credits Arr.	Fall
Land Res.	692	Credits Arr.	Spring
	Seminar		

Topics in land resources. (Offered as demand warrants.)

Land Res.	693	Credits Arr.	Fall
Land Res.	694	Credits Arr.	Spring
	Special Topics		

Land Res.	697	Credits Arr.	Fall
Land Res.	698	Credits Arr.	Spring
	Thesis		

(Admission by arrangement.)

LINGUISTICS

Ling.	101	3 Credits	Fall
Ling.	102	3 Credits	Spring
	The Nature of Language (3+0)		

A beginning course in the study of language: systematic analysis of human language and description of its grammatical structure, distribution and diversity.

Ling.	381	3 Credits	Fall
Ling.	382	3 Credits	Spring

Structural Linguistics and
Linguistics Analysis (3+0)

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.	388	3 Credits	Spring
	Alaskan Athapaskan (3+0)		

Athapaskan languages in general and Alaskan dialects in particular; dialect geography, comparative phonology; Eyak, Tlingit, Haida. (Admission by arrangement. Offered as demand warrants.)

Ling.	493	Credits Arr.	Fall
Ling.	494	Credits Arr.	Spring
	Special Topics		

Various languages and subjects in linguistics. (Admission by arrangement. Offered as demand warrants.)

MATERIALS TECHNOLOGY

M.T.	51	3 Credits	As demand warrants
	Technical Math (3+0)		

M.T.	52	2 Credits	(1+3)
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Survey and application of mathematics up to calculus for conceptual use in welding. *Offered only at ACC.*

M.T.	55	1 Credit	As demand warrants
	Basic Metallurgy (1+0)		

Simple ferrous metallurgy for weldors and foremen. Physical properties, crystal structures, effects of heating and cooling. *Offered only at ACC.*

M.T.	57	2 Credits	As demand warrants
	Technical Blueprints (1+3)		

Drafting and blueprint interpretation for weldors. *Offered only at ACC.*

M.T. 61 4 Credits As demand warrants
CO₂ Dip Transfer Welding (2+6)

Electrical characteristics of power supplies for CO₂ welding. Wire feeders, inductance, drop transfer rate, arc characteristics of dip transfer mode. *Offered only at ACC.*

M.T. 71 4 Credits As demand warrants
Principles of Indust. Science (3+3)

Concepts of heat flow, electricity and radiation as applied in the welding field. Preparation for M.T. 235. *Offered only at ACC.*

M.T. 72 4 Credits As demand warrants
Physics for welding (3+3)

Physical properties of solids and modifications encountered in welding. Preparation for M.T. 255 and M.T. 261. *Offered only at ACC.*

M.T. 73 3 Credits As demand warrants
Electric Welding Equipment (2+3)

Study of the proprietary equipment in use in welding, power sources, and control systems. *Offered only at ACC.*

M.T. 74 5 Credits As demand warrants
Tig Welding (2+9)

Welding of common non-ferrous alloys by the tig and plasma needle arc processes. Equipment, metallurgy and shielding gases. *Offered only at ACC.*

M.T. 75 3 Credits As demand warrants
Welding Processes (3+0)

A study of the approximately three score welding processes in common use. Covers the advantages, limitations, application, and cost factors for each. *Offered only at ACC.*

M.T. 76 5 Credits As demand warrants
Inert Gas Metal Arc Welding (2+9)

Electrical characteristics of inert gas metal arcs, gas mixtures, pulsed arc, metallurgy of non-ferrous alloys. (Prerequisite: M.T. 61) *Offered only at ACC.*

M.T. 79 3 Credits As demand warrants
Welding of Plastics (1+6)

Introduction of weldable plastics, producing joints by fusion, adhesives and solvents. *Offered only at ACC.*

M.T. 81 1 Credit As demand warrants
Field Training (1+0)

Responsible supervised welding work in industry in summer or between semesters. *(Offered at ACC only)*

M.T. 82 2 Credits As demand warrants
Codes and Physical Tests (2+0)

Survey of engineering codes for welding, codes and destructive tests, procedure specifications and physical tests. *Offered only at ACC.*

M.T. 83 3 Credits As demand warrants
Joining Dissimilar Metals, Soldering and Silver Brazing (1+6)

Study and practice in joining of similar and dissimilar materials by the common varieties of soldering, brazing and braze welding materials and methods, repair welding cast iron. *Offered only at ACC.*

M.T. 85 3 Credits As demand warrants
Materials Science (3+0)

Materials science, nature and properties of crystals, metals, polymers, glasses, ceramics and intermetallics, bonds, competition of materials. Prerequisite for metallurgy and polymers. Excellent for ceramics students and those interested in synthetic fabrics. *Offered only at ACC.*

M.T. 88 4 Credits As demand warrants
Automatic Welding Systems (1+9)

Principles of automatic welding with dip transfer, metal inert gas arc, tig, submerged arc and tubular wire processes, welding jigs and fixtures. Structuring of linear and rotary holding equipment and manipulators, development of automatic systems. *Offered only at ACC.*

M.T. 89 4 Credits As demand warrants
Welding Metallurgy (3+3)

Constituent diagrams, phases, crystals, discontinuities. Weldability of metals, heat control. *Offered only at ACC.*

M.T. 95 3 Credits As demand warrants
Introduction to Polymers (1+6)

The varieties of plastics, molecular chains, properties, uses, fabrication techniques. *Offered only at ACC.*

M.T. 97 3 Credits As demand warrants
General Non-Destructive Testing (1+6)

Advantages and use of dye penetrants, eddy current, magnetic flux, ultrasonics, and other diagnostic methods for quality assurance on weldments. *Offered only at ACC.*

M.T. 98 4 Credits As demand warrants
Radiography (2+6)

X-ray radioisotope radiation, safety, films, electronic readouts, exposure techniques, interpretation of radiographic films and image amplifier presentations. *Offered only at ACC.*

M.T. 99 5 Credits As demand warrants
Welding Problems (1+12)

Advanced work in small groups on specific welding problems involving applications, research. Seminars with staff and precision laboratory techniques. *Offered only at ACC.*

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. 55 3 Credits Fall-Spring
Elementary Algebra (3+2)

A beginning course for students whose background is very weak. This course is designed to introduce the student to the basic concepts of algebra. These concepts include sets and their operation, numerals and number systems and their properties, variables, sentences — open and closed, properties of order, absolute value, linear and quadratic equations and inequations; factors, exponents, radicals, graphs, relations and functions.

Math. 103 3 Credits Fall
Math. 104 3 Credits Spring
Concepts of Mathematics (3+0)

A cultural sequence for students requiring a year's sequence in mathematics. This course is designed to acquaint students, having a limited mathematical background, with mathematical thought and history. It emphasizes mathematical reasoning rather than formal manipulation. Topics may be chosen from

number theory, topology, set theory, geometry, algebra and analysis. Not open to physical science majors and students having completed a course in calculus or beyond.

Math. 105 3 Credits Fall-Spring
Intermediate Algebra (3+2)

Set theory, number systems, absolute value, inequalities, linear and quadratic equations, exponents and radicals, polynomials and functions.

Math. 106 5 Credits Fall-Spring
College Algebra and Trig. (5+0)

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 3 Credits Fall-Spring
College Algebra (3+0)

Review of high school algebra, determinants, matrices, topics in the theory of equations, systems of equations, inequalities, curve sketching, probability and applications. (Course not offered on main campus at College.)

Math. 108 2 Credits Fall-Spring
Trigonometry (2+0)

Plane trigonometry with emphasis on the analytical and periodic properties of trigonometric functions. (Prerequisite: Math. 105 or equivalent.)

Math. 109 3 Credits Fall-Spring
Analytic Geometry (3+0)

Rectangular coordinate system, the straight line, conic sections, transcendental curves, polar coordinates, parametric equations, and solid analytic geometry. (Course not offered on main campus at College. Prerequisite: high school trigonometry or Math. 108.)

Math. 110 3 Credits Spring
Mathematics of Finance (3+0)

Simple and compound interest, discount, annuities, amortization, sinking funds, depreciation and capitalization. (Prerequisite: Math. 105, or admission by arrangement.)

Math.	121	4 Credits	Fall
Math.	122	4 Credits	Spring
Elementary Functions and Modern Algebra (4+0)			

First semester: sets, logic, groups and fields, vectors, analytic geometry, relations and functions. Second semester: complex numbers, exponential functions, logarithmic functions, trigonometry.

Math.	200	4 Credits	Fall-Spring
Math.	201	4 Credits	Fall-Spring
Math.	202	4 Credits	Fall-Spring
Calculus (4+0)			

Techniques and application of differential and integral calculus, vector analysis, partial derivatives, multiple integrals and infinite series. (Prerequisites: Math. 106 or 122.)

Math.	302	3 Credits	Fall
Differential Equations (3+0)			

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	3 Credits	Fall
Math.	304	3 Credits	Spring
Introduction to Modern Algebra (3+0)			

Introduction to sets, groups, rings, fields, and Galois theory.

Math.	305	3 Credits	On Demand
Geometry (3+0)			

Topics selected from such fields as: projective geometry, algebraic geometry, algebraic topology, and geometry of convex bodies.

Math.	310	3 Credits	Spring
Numerical Analysis (3+0)			

Finite differences, numerical solutions of differential equations, relaxation methods, interpolation, equations, and matrices. Error analysis. (Prerequisites: Math. 302.)

Math.	312	3 Credits	Spring
Numerical Methods for Engineers (3+0)			

Numerical methods 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 or concurrently with Math. 302.)

Math.	314	3 Credits	Spring
Linear Algebra (3+0)			

Linear equations, finite dimensional vector spaces, matrices, determinants, linear transformations, characteristic values. Inner

Math.	319	3 Credits	Fall
Math.	320	3 Credits	Spring
Intermediate Analysis			

(Math 319) An investigation of the limit concept with special reference to functions on the real line, sequences and series of real numbers, and integration of continuous functions. Prerequisite: Math. 202, 314. (Math 320) Functions of several variables, transformations, mappings, implicit function theorems, Green's theorem. Prerequisite: Math 319.

Math.	345	3 Credits	Upon Demand
Modern Math Concepts for the Elementary School			

Includes 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. (Prerequisite: One full year of elementary school teaching.)

Math.	371	3 Credits	Fall
Probability (3+0)			

Probability spaces, conditional probability, random variables, continuous and discrete distributions, expectation, moments, moment generating functions, and characteristic functions.

Math.	403	3 Credits	Fall
Introduction to Real Analysis (3+0)			

Sets, real numbers, functions. Topology of Metric Spaces, mappings. Prerequisite: Math 320.

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Math. 404 3 Credits Spring
Topics in Analysis or Topology (3+0)

To be alternated with Math 410. Topics to be announced at time of registration. Prerequisite: Math 403.

Math. 405 3 Credits Fall
Math. 406 3 Credits Spring

Applied Mathematics (3+0)

Infinite series, functions of several variables, algebra and geometry of vectors, matrices, vector field theory, partial differential equations, complex variables. (Prerequisite: Math. 302 or permission of the instructor. To be offered in alternate years.)

Math. 407 3 Credits Fall
Math. 408 3 Credits Spring

Mathematical Statistics (3+0)

Distribution 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. 410 3 Credits Spring
Introduction to Complex Analysis (3+0)

To be alternated with Math 404. Analytic function, Cauchy's theorem. Sequences and series.

Math. 411 3 Credits On Demand
Differential Equations (3+0)

Existence and uniqueness of solutions of ordinary differential equations. Linear systems. Geometric properties of solutions. A deeper and less computational course than Math. 302. Prerequisite: Math. 320.

Math. 417 3 Credits Fall
Differential Geometry (3+0)

Differential geometry of curves and space in Euclidean three-space and extensions to Riemannian n-space.

Math. 491 Credits Arr. Fall
Math. 492 Credits Arr. Spring

Seminar

Topics are selected according to needs and interests of the students to introduce them to independent study and research.

Math. 493 Credits Arr. Fall
Math. 494 Credits Arr. Spring

Special Topics

Primarily for mathematics majors. Various topics studied.

Math. 601 3 Credits Fall
Math. 602 3 Credits Spring

Complex Function Theory (3+0)

Analytic functions, singularities, analytic continuation, integration, Riemann surfaces, the logarithmic function, conformal representation. (Prerequisite: Math. 403 or admission by arrangement. Offered as demand warrants.)

Math. 605 3 Credits Fall
Math. 606 3 Credits Spring

Real Function Theory (3+0)

The Lebesgue integral on the line, metric spaces, Banach spaces, general theory of measure and integration. (Prerequisite: Math. 403 or admission by arrangement.)

Math. 608 3 Credits Spring
Partial Differential Equations (3+0)

First and second order differential equations, boundary value problems, existence and uniqueness theorems. Green's functions, principal equations of mathematical physics. (Prerequisite: Math. 406 or admission by arrangement. Offered as demand warrants.)

Math. 609 3 Credits Fall
Math. 610 3 Credits Spring

Modern Algebra (3+0)

Groups, rings, fields, Galois theory, additional selected topics. (Prerequisite: Math. 304 or admission by arrangement.)

Math. 611 3 Credits Fall
Math. 612 3 Credits Spring

Mathematics of Physics and Engineering (3+0)

(Same as Phys. 611, 612)

Advanced consideration of such topics as transform methods, asymptotic methods, Green's function, Sturm-Liouville theory, conformal mapping and calculus of variations with applications to problems arising in physics. (Prerequisites: Math. 320 or 406 and permission of the instructor.)

Math.	691	Credits Arr.	Fall
Math.	692	Credits Arr.	Spring
Seminar			
Various topics. (Admission by arrangement.)			
Math.	693	Credits Arr.	Fall
Math.	694	Credits Arr.	Spring
Special Topics			
Various subjects studied.			
Math.	697	Credits Arr.	Fall
Math.	698	Credits Arr.	Spring
Thesis			

MECHANICAL ENGINEERING

M.E.	402	4 Credits	Spring
Dynamics of Machines (3+3)			
Vibration, balancing, gyroscopic effects, stability of rotors, closed loop systems, and man-machine interaction. (Prerequisite: M.E. 302.)			
M.E.	413	3 Credits	Fall
Mechanical Engineering Thermodynamics (3+0)			
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. (Prerequisites: E.S. 341, 346.)			
M.E.	414	3 Credits	Spring
Thermal Systems (3+0)			
Introduction to power and space conditioning systems. Energy conversion, electric power distribution, heating and ventilating, total energy systems. (Prerequisite: M.E. 413.)			
M.E.	430	3 Credits	Fall-Spring
Instruments and Controls (2+3)			
Automatic control and instrumentation of equipment including mechanical, hydraulic, pneumatic, electric, and electronic systems. (Prerequisite: senior standing. Offered as demand warrants.)			
M.E.	441	3 Credits	Fall
Mass and Energy Transfer (3+0)			
Heat transfer, diffusion, ablation, and flame propagation. (Prerequisite: E.S. 346.)			
M.E.	450	3 Credits	Fall-Spring
Theory of Flight (3+1)			
Airfoil theory in subsonic and supersonic flow. Propulsion systems, stability, and performance of aircraft. (Prerequisite: E.S. 341.)			
M.E.	491	1 Credit	Fall
Seminar I (1+0)			
M.E.	492	1 Credit	Spring
Seminar II			
Experience in planning, writing and presenting technical reports. M.E. 491 will be based on a literature study and M.E. 492 on an independent investigation or experiment planned and conducted by the student.			

M.E.	150	1 Credit	Fall-Spring
Aerodynamics for Pilots (1+1)			
Nature of the atmosphere, elementary air foil theory, drag and power requirements, performance computations, and introduction to stability. For those who desire a basic understanding of flight with minimum mathematical background. (Prerequisite: high school algebra and general science.)			
M.E.	302	3 Credits	Spring
Kinematics of Machines (2+3)			
Velocity and acceleration analysis of mechanisms and machines; principles of transforming and transmitting motion, including linkages, cams, gears, belt, chains, and trains of mechanism; dimensional synthesis. (Prerequisites: Math. 202, E.S. 208.)			
M.E.	321	3 Credits	Fall
Industrial Processes (3+0)			
Methods and equipment used in working, welding, casting, cutting, machining, and fabrication of materials.			
M.E.	401	3 Credits	Fall
Machine Design (2+6)			
Design of machine elements, including allowances, tolerances, keys, shafts, couplings, spring, clutches, belts, brakes, flywheels, power screws, gears, bearing, lubrication, and stress analysis of components. (Prerequisites: E.S. 331, M.E. 302.)			

M.E. 493 Credit Arr. Fall
M.E. 494 Credit Arr. Spring

Special Problems

Guided study of special topics of interest to the student. (Prerequisite: approval by instructor and advisor.)

M.E. 616 3 Credits Spring
Space Conditioning (2+3)

Principles of heating, ventilating, air conditioning, and refrigeration with practical applications. (Prerequisite: M.E. 414.)

M.E. 617 4 Credits Fall
Power Analysis (3+3)

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. (Prerequisite: M.E. 413.)

M.E. 693 Credit Arr. Spring
M.E. 694 Credit Arr. Fall

Thesis

Research and thesis preparation. (Prerequisite: graduate standing.)

METALLURGY

Met. 304 3 Credits Spring
Introduction to Metallurgy (3+0)

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 2 Credits Spring
Fire Assaying (0+6)

Sampling and preparation of ores, mill products, and smelter products for assay. Assaying gold, silver and lead. (Prerequisite: permission of the instructor. Offered as demand warrants.)

Met. 332 4 Credits Spring
Physical Metallurgy and Metallography (3+3)

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 Credits Arr. Fall
Met. 494 Credits Arr. Spring

Special Topics

Various subjects studied, principally through directed reading and discussions. (Admission by arrangement.)

Met. 693 Credits Arr. Fall
Met. 694 Credits Arr. Spring

Special Topics

Various subjects studied. (Admission by arrangement.)

MILITARY SCIENCE

Mil. 101 1½ Credits Fall
Mil. 102 1½ Credits Spring

First-Year Military Science (2+1)

First-year basic: organization of the Army; leadership; rifle marksmanship; weapons; role of the Army and national security; leadership development; effective communications.

Mil. 201 1½ Credits Fall
Mil. 202 1½ Credits Spring

Second-Year Military Science (2+1)

Second-year basic: American military history; land navigation; introduction to tactics and operations; leadership development.

Mil. 301 3 Credits Fall
Mil. 302 3 Credits Spring

Third-Year Military Science (3+1)

First-year advanced: leadership; military teaching; small unit tactics; communications; leadership development; branches of the Army; advanced level enrichment subject.

Mil. 401 3 Credits Fall
Mil. 402 3 Credits Spring

Fourth-Year Military Science (3+1)

Second-year advanced: operations; logistics; Army administration; military law; role of the United States in world affairs; seminar in

leadership and management; leadership development; advanced level enrichment subject.

Mil. 403 2 Credits Spring
ROTC Flight Training
 Thirty-five hours of ground school and 36½ hours of flight. (Prerequisites: completion of junior year of ROTC and approval of PMS and Dean. Applicants must also pass Army Flight Physical Examination and aptitude test)

MINERAL AND PETROLEUM TECHNOLOGY

M.P.T. 61 3 Credits Fall
Math for Technicians (3+0)
 Arithmetic, trigonometry, slide rule, graphs, and computations applicable to mineral and petroleum fields.

M.P.T. 62 3 Credits Spring
Mineralogy and Petrology (2+3)
 Mineral and rock identification of hand specimens. Physical characteristics and simple chemical tests.

M.P.T. 63 2 Credits Fall
Map Reading and Drafting (0+6)
 Map interpretation, lettering, drafting and use of equipment.

M.P.T. 64 3 Credits Spring
Measurements and Mapping (2+3)
 Use of Brunton, transit, level and other surveying equipment. Map preparation.

M.P.T. 65 3 Credits Fall
Science for Technicians (3+0)
 Basic principles of chemistry and physics as applicable to mineral and petroleum technology.

M.P.T. 67 3 Credits Fall
Petroleum I (3+0)
 Introduction to petroleum industry. Practical exploration and drilling technology.

M.P.T. 68 3 Credits Spring
Petroleum II (3+0)
 Pipeline, transportation and storage technology.

M.P.T. 69 3 Credits Fall
Geography and Geology (3+0)
 Introduction to geography and physical geology with emphasis to Alaska.

M.P.T. 71 3 Credits Fall
Exploration Methods (2+3)
 Introduction to geochemical, geophysical and physical methods of exploration in mineral and petroleum fields.

M.P.T. 72 3 Credits Spring
Milling and Metallurgy (2+3)
 Sampling and sample preparation. Methods of ore dressing on a unit and continual basis. Introduction to physical metallurgy.

M.P.T. 73 2 Credits Fall
Technical Drawing (0+6)
 Drafting methods used in exploration and productions, geometric construction, orthographic projection, sectioning and pictorial representation.

M.P.T. 74 3 Credits Spring
Laboratory Instrumentation and Control (2+3)
 Introduction to practical laboratory techniques, modern instrumentation methods and applications.

M.P.T. 75 3 Credits Fall
Petroleum III (2+3)
 Production processing and instrumentation. Technology, field and laboratory testing.

M.P.T. 76 3 Credits Spring
Petroleum IV (3+0)
 Petroleum geology, reservoir and conservation technology.

M.P.T. 78 3 Credits Spring
Computer Applications (2+3)
 Introduction to computer applications in mineral and petroleum industries. Familiarization with FORTRAN II programming language.

M.P.T. 80 3 Credits Spring
Introduction to Mineral and Petroleum Economics (3+0)
 Elements of economics, resource economics and operational cost analysis applied to mineral and petroleum production.

COURSE DESCRIPTIONS 255

M.P.T. 82 1 Credit Spring
Field Trip
 Field trip to observe exploration and operational functions in mineral and petroleum fields. Technical report required.

MINERAL PREPARATION ENGINEERING

M.Pr. 313 3 Credits Fall
Introduction to Mineral Preparation (2+3)

Elementary theory and principles of unit processes of liberation, concentration, and solid-fluid separation as applied to mineral beneficiation. (Prerequisite: junior standing or permission of the instructor.)

M.Pr. 314 3 Credits Spring
Unit Preparation Processes (1+6)

Principles and practices involved in liberation and concentration by gravity, electro-magnetic 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: M.Pr. 313.)

M.Pr. 406 3 Credits Spring
Materials Handling Systems (2+3)

The techniques and design of systems to move ore, concentrates and waste materials in mining and milling operations. (Prerequisite: senior standing or permission of the instructor.)

M.Pr. 418 4 Credits Spring
Emission Spectroscopy, X-Ray Spectroscopy, Atomic Absorption and Electron Microscopy (2+3)

Can be taken for any combination of parts A, B, C, D as demand warrants. (Admission by special arrangement.)

M.Pr. 418A — Theory and application of emission spectrography; two one-hour classes; one three-hour lab per week for five weeks. One credit.

M.Pr. 418B — Theory and application of x-ray spectrograph and diffractometer; two one-hour classes; one three-hour lab per week for five weeks. One credit.

M.Pr. 418C — Theory and application of atomic absorption spectrophotometry; two one-hour classes; one three-week lab per week for five weeks. One credit.

M.Pr. 418D — Theory and application of electron microscope; two one-hour classes; one three-hour lab per week for five weeks. One credit.

M.Pr. 431 2 Credits Fall
Applied Ore Microscopy (1+3)

Preparation of polished sections of ores. Identifications of ore minerals in reflected light by physical, optical, and chemical methods. Applications to ore genesis, drill core interpretation, beneficiation, and process control. (Prerequisite: Geol. 213.)

M.Pr. 433 3 Credits Fall
Coal Preparation (2+3)

Unit operations, flowsheets, washability characteristics, and control by sink-float methods for coal preparation plants. Market requirements and economics of preparation. (Prerequisite: M.Pr. 313.)

M.Pr. 493 Credits Arr. Fall
M.Pr. 494 Credits Arr. Spring
Special Topics

Various subjects studied through directed reading, discussions, and laboratory work. (Admission by arrangement.)

M.Pr. 601 3 Credits Fall
Froth Flotation (2+3)

Theory and application of bulk and differential froth flotation to metallic minerals, non-metallic minerals, and coal. (Admission by arrangement.)

M.Pr. 606 3 Credits Spring
Plant Design (1+6)

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 Credits Arr. Fall
M.Pr. 694 Credits Arr. Spring
Special Topics

Various subjects studied. (Admission by arrangement.)

M.Pr.	695	3 Credits	Fall
M.Pr.	696	3 Credits	Spring

Mineral Preparation Research (1+6)

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	3 Credits	Spring
M.Pr.	698	3 Credits	Spring

Thesis

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.	101	3 Credits	Fall
		Minerals and Man (3+0)	

A general survey of the impact of the mineral industries on man's economic, political and environmental systems.

Min.	102	4 Credits	Spring
		Mining Engineering Systems (4+0)	

Can be taken in 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 four weeks. One credit. Min. 102B — Utilization and application of mining explosives. Four one-hour classes for four weeks. One credit. Min. 102C — Fundamentals of mining systems for bedded, massive, vein and surface deposits. Four one-hour classes per week for eight weeks. Two credits.

Min.	202	3 Credits	Spring
		Mine Surveying (2+3)	

Surveying principles for surface and underground control of mining properties. Field and office procedures for preparation of maps and engineering data. (Prerequisite: Math. 106.)

Min.	320	1 Credit	Fall-Spring
		Seminar and Senior Field Trip	

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. (Prerequisites: senior standing and permission of the instructor. Fee: field trip expenses to be paid by student. Offered as demand warrants.)

Min.	333	2 Credits	Fall
		Mining and Mineral Leasing Law (2+0)	

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	1 Credit	Spring
		Practical Engineering Report	

Twelve weeks of 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.	401	3 Credits	Fall
		Rock Mechanics (2+3)	

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 or concurrent registration.)

Min.	402	3 Credits	Spring
		Energy Economics (3+0)	

Economics of mineral fuels in the competitive market; regional and national projection of energy supply and demand; structure of coal, petroleum, natural gas, and uranium industries; and seminar on energy policies. (Admission by arrangement.)

Min.	403	3 Credits	Fall
		Operations Research in Mineral Industries (2+3)	

The application of operations research techniques in mineral exploration, mineral economics, mine systems, and mineral preparation. (Prerequisite: senior standing or permission of the instructor.)

Min. 405 3 Credits Fall
Geophysical and Geochemical
Exploration (2+3)

Theory and techniques of geophysical and geochemical exploration. Chemical, gravimetric, seismic, electrical, magnetic and radioactive measurements. (Prerequisites: Chem. 202, Phys. 212.)

Min. 406 4 Credits Spring
Mining Plant Engineering (3+3)

Principles of mine ventilation, haulage, pumping and energy transmission system. (Prerequisites: Min. 102, Phys. 212 and E.S. 341.)

Min. 408 4 Credits Spring
Mineral Valuation and Economics (3+3)

Theory of sampling techniques, deposit and reserve calculations and analysis of mineral economic problems (Prerequisite: Min. 102 or permission of the instructor.)

Min. 493 Credits Arr. Fall
Min. 494 Credits Arr. Spring
Special Topics

Various subjects studied, principally through directed reading and discussion. (Admission by arrangement.)

Min. 621 3 Credits Fall
Advanced Mineral Economics (3+0)

Economics of mineral exploitation and utilization. International trade, state and federal policies, financial control and research methods. (Admission by arrangement.)

Min. 691 Credits Arr. Fall
Min. 692 Credits Arr. Spring
Seminar

Reading and report required. (Admission by arrangement.)

Min. 693 Credits Arr. Fall
Min. 694 Credits Arr. Spring
Special Topics

Various subjects studied. (Admission by arrangement.)

Min. 697 Credits Arr. Fall
Min. 698 Credits Arr. Spring
Thesis

MUSIC

Mus. 101 1 Credit Fall-Spring
Chorus (0+3)

Mus. 109 1 Credit Fall-Spring
ROTC Band (0+3)

Mus. 203 1 Credit Fall-Spring
Orchestra (0+3)

Mus. 205 1 Credit Fall-Spring
Concert Band (0+3)

Mus. 211 1 Credit Fall-Spring
"Choir of the North" (0+3)

Mus. 307 1 Credit Fall-Spring
Chamber Music (0+3)

Mus. 313 1, 2, 3 Credits Fall-Spring
Opera Workshop (0+3, 6 or 9)

Mus. 317 1 Credit Fall-Spring
Collegium Musicum (0+3)

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 toward graduation.

Mus. 151, 152 1 Credit Fall
Mus. 251, 252 1 Credit Spring
Class Lessons (0+3)

Class instruction in piano, voice, or orchestral instrument.

Mus. 161, 162 2 or 4 Credits Fall-Spring
Mus. 261, 262 2 or 4 Credits Fall-Spring
Mus. 361, 362 2 or 4 Credits Fall-Spring
Mus. 461, 462 2 or 4 Credits Fall-Spring
Private Lessons (1/2 or 1+1)

Private instruction in piano, voice, or instruments. Private instruction shall consist of one private lesson and one master class per week. Music performance majors may enroll for four credits. All others will normally enroll for two credits. (Prerequisite: Admission by audition.)

MUSIC THEORY AND HISTORY

Mus. 51 3 Credits Fall-Spring
Music Fundamentals (3+0)
 Rudiments of music for students with little or no prior training in music reading.

Mus. 105 1 Credit Fall-Spring
Jazz Singers (0+3)
 This course is designed to offer the student a new dimension in music literature. The emphasis will be on the study and performance of the vocal literature in the jazz idiom.

Mus. 123 3 Credits Fall
 Mus. 124 3 Credits Spring
Introduction to Music (2+3)
 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.

Mus. 131 3 Credits Fall
 Mus. 132 3 Credits Spring
Basic Theory (2+3)
 First Semester: intensive training in musical skills, including sight reading, ear training dictation and keyboard. Use will be made of programmed materials in a laboratory situation as an adjunct to classroom exposition of musical materials. Second Semester: Concentration upon acquisition of skill in harmonic and formal analysis and guided stylistic composition.

Mus. 221 3 Credits Fall
 Mus. 222 3 Credits Spring
History of Music (3+0)
 Fall Semester: music before 1750. Spring Semester: music since 1750. (Prerequisite: Mus. 131-132 or permission of the instructor.)

Mus. 231 3 Credits Fall
 Mus. 232 3 Credits Spring
Advanced Theory (3+0)
 Continued study, in depth, of harmony and musical form through analysis of representative works from the standard repertoire. The second semester will be devoted to study and synthesis of 20th century stylistic and harmonic idioms. (Prerequisites: Mus. 131-132 or permission of instructor.)

Mus. 309 3 Credits Fall-Spring
Elementary School Music Methods (3+0)
 (3+0)
 (Same as Ed. 309)

Principles, procedures and materials for teaching music to children at the elementary level. (Prerequisite: Ed. 313 and prerequisites thereto.)

Mus. 315 2 Credits Fall-Spring
Music Methods and Techniques (1+3)
 Instruction in voice and the basic instruments of band and orchestra.

Mus. 331 2 Credits Fall
 Mus. 332 2 Credits Spring
Form and Analysis (2+0)

A detailed survey of formal and stylistic musical elements in historical context, with special application to problems of proper stylistic performance. Fall Semester: 17th century to 1800. Spring Semester: 1800 to the present. (Prerequisite: Mus. 232 or permission of the instructor.)

Mus. 351 2 Credits Fall
Choral Conducting (2+0)
 Principles of conducting and interpretation with vocal ensembles. (Prerequisite: Mus. 232.)

Mus. 352 2 Credits Spring
Instrumental Conducting (2+0)
 Principles of conducting and interpretation with instrumental ensembles. (Prerequisite: Mus. 232.)

Mus. 405 3 Credits As demand warrants
Methods of Teaching Music (3+0)
 (Same as Ed. 405)

Methods and problems of teaching music in junior and senior high schools, with emphasis on the general music program. (Prerequisites: 100 semester hours, Ed. 332 and prerequisites thereto, and Mus. 232, or permission of the instructor.)

Mus. 431 3 Credits Fall
Counterpoint (3+0)
 Study of contrapuntal techniques of the sixteenth and eighteenth century, by means of analysis and synthesis of pieces in contrapuntal idioms.

COURSE DESCRIPTIONS 259

Mus. 432 3 Credits Spring
Orchestration and Arranging (3+0)

Principles and practices of instrumentation and arranging for vocal and instrumental ensembles.

Mus. 491 2 Credits Fall

Mus. 492 2 Credits Spring

Senior Seminar (2+0)

Variety of subject matter depending on the interests and needs of students.

Mus. 493 Credit Arr. Fall

Mus. 494 Credit Arr. Spring

Special Topics

Various subjects. (Admission by arrangement.)

Mus. 693 Credit Arr. Fall

Mus. 694 Credit Arr. Spring

Special Topics

Various subjects. (Admission by arrangement.)

OCEANOGRAPHY AND OCEAN ENGINEERING

OCN 411 3 Credits Fall

General Oceanography (3+0)

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. (Prerequisite: senior or graduate standing in a disciplinary science, mathematics or engineering.)

OCN 613 3 Credits Spring

Marine Geology (3+0)

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 standing in geology or appropriate interdisciplinary programs; or permission of the instructor.)

OCN 620 3 Credits Fall

Introduction to Physical Oceanography (3+0)

(Same as Phys. 620 and Geol. 620.) Physical description of the sea, physical properties of sea water, methods and measurements, boundary

processes, currents, tides and waves, regional oceanography. (Prerequisite: science or engineering degree, or permission of the instructor.)

OCN 622 3 Credits Fall

Ocean Currents and Water Masses (3+0)

Theories of ocean circulation, wind currents, and boundary currents. Topographic influences on currents, origin of water masses, instruments, and observations. (Prerequisite: OCN 620 or permission of the instructor.)

OCN 624 3 Credits Spring

Estuarine Dynamics (3+0)

Physical and chemical properties of estuarine waters including kinematics and dynamics of motion. Classification of estuaries by geomorphological and oceanographic parameters. (Prerequisites: OCN 620, Math. 302, or permission of the instructor.)

OCN 650 3 Credits Fall

Introduction to Biological Oceanography (3+0)

Survey of marine plants and animals and their inter-relationships with major emphasis on primary productivity and marine food chains.

OCN 661 3 Credits Spring

Chemical Oceanography I (3+0)

(Same as Chem. 661) 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, 332, or permission of the instructor.)

OCN 663 3 Credits Fall

Chemical Oceanography II (3+0)

(Same as Chem. 663) 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. (Prerequisite: OCN 661, or permission of the instructor.)

OCE 670 3 Credits Spring
Waves and Tides (3+0)

(Same as C.E. 670) Generation and propagation of waves at sea, theory of waves, wave spectra and forecasting, observation and recording of ocean waves, tsunamis, tides, and internal waves.

OCE 672 3 Credits Fall
Underwater Acoustics (3+0)

(Same as E.E. 672) Nature of sound, units and standards, sound-related characteristics of sea water, transmission and transmission losses, effect of discontinuities, reverberation, and measurement techniques.

OCE 674 3 Credits Spring
Environmental Hydrodynamics (3+0)

(Same as C.E. and Phys. 674) Mechanics of fluids on a rotating earth. Navier Stoke's equations, boundary layer phenomena, turbulent flow, and applications of hydrodynamics to motion of stratified fluids such as the atmosphere and ocean.

OCE 676 3 Credits Fall
Coastal Engineering (3+0)

(Same as C.E. 676) Review of deep and shallow water waves, littoral drift, coastal structures, pollution problems, harbor seiches. (Prerequisite: OCE 670.)

OCE 680 3 Credits Fall-Spring
Ocean Engineering Field Work (3+0)

Field experience either on a vessel or at an ocean engineering site selected by the student in consultation with his graduate committee. Usual duration of the field work is approximately two months.

OCN 690 0 Credits Spring
Colloquium

OCN 691 1 Credit Fall

OCN 692 1 Credit Spring

Seminar

OCN 693 Credits Arr. Fall

OCN 694 Credits Arr. Spring

Special Topics

OCN 697 Credits Arr. Fall

OCN 698 Credits Arr. Spring

Thesis

OFFICE ADMINISTRATION

O.A. 61 3 Credits Fall
Clerical Skills (3+0)

Instruction in various duplication processes, filing, responsibilities and duties of a clerical worker.

O.A. 63 3 Credits Fall-Spring
Adding and Calculating Machines (1+2)

Basic operation of adding, calculating and key punch machines.

O.A. 65 3 Credits Fall
Machine Transcription (3+0)

Transcription from various voice-writing machines with special emphasis on spelling, word choice, and grammar.

O.A. 66 3 Credits Spring
Machine Transcription (3+0)

Transcription training, with emphasis on mailable material, efficient office routine, setting up letters.

O.A. 99 6 Credits Spring
Office Practicum (2+10)

Same as O.A. 299

O.A. 101 3 Credits Fall
Beginning Shorthand (3+1)

Gregg Shorthand, Diamond Jubilee Series. Shorthand writing or practiced material demonstrating all principles. Unfamiliar material of short duration introduced.

O.A. 102 3 Credits Spring
Intermediate Shorthand (3+1)

Reinforces basic Gregg theory principles; emphasis upon speed dictation; transcription introduced.

O.A. 103 Fall-Spring
Elementary Typewriting

Beginning course in typewriting with emphasis on personal use application, learning to use typewriting as a tool of literacy and communication.

O.A. 105 2 Credits Fall-Spring
Intermediate Typewriting (2+2)

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 2 Credits Fall-Spring
Advanced Typewriting (2+2)

Letter writing with special problems, reports, business forms, statistical tabulations and legal documents; emphasis is on speed and office standards. (Prerequisites: O.A. 105 or equivalent and speed of 40 words per minute.)

O.A. 201 3 Credits Fall
Advanced Shorthand (3+1)

Intensive dictation practice; emphasis on speed building and transcription techniques. (Prerequisites: O.A. 102, 106 or equivalent.)

O.A. 202 3 Credits Spring
Advanced Dictation and Transcription (2+2)

Optimum speed, accuracy, technical applications and transcription are realized with emphasis on production of mailable copy. Comprehensive review is provided. (Prerequisites: O.A. 102, 106, 201 or equivalent.)

O.A. 203 3 Credits Fall
Office Machines (1+2)

Basic operation and application of current office machines, (Key punch included on main campus.) (Prerequisite: O.A. 105 or equivalent.)

O.A. 208 3 Credits Fall-Spring
Machine Transcription and Filing (3+0)

Developing proficiency in machine transcription; principles and practical applications of filing. (Prerequisite: O.A. 105 or equivalent.)

O.A. 231 3 Credits Fall
Business Correspondence (3+0)

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. 292 3 Credits Spring
Introduction to Data Processing (3+0)

(Same as B.A. 292)
 Introduction to data processing. Related management consideration.

O.A. 299 6 Credits Spring
Office Practicum (2+10)

Actual office experience. Students are required to work in selected offices on campus for ten hours each week. They 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. (Admission by permission of the instructor.)

O.A. 302 3 Credits Spring
Executive Secretarial Procedures (3+0)

Duties, responsibilities and personal qualities of the secretary; human relations in the business office; secretarial training projects that require the application of the various secretarial abilities; intricate office practices in higher level secretarial duties; office ethics. (Prerequisite: Junior standing, or by permission of the instructor.)

O.A. 351 1 Credit Fall-Spring
Readings in Office Administration (1+0)

Readings in current problems, practices, procedures, methods. Not more than two credits to be earned by any student.

O.A. 360 3 Credits Fall-Spring
C.P.S. Coaching (3+0)

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 permission of the instructor.)

O.A. 408 3 Credits As demand warrants
Methods of Teaching Business Education (3+0)

(Same as Ed. 408)
 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. Prerequisites: 100 semester hours, Ed. 332 and prerequisites thereto.)

O.A. 493 Credits Arr. Fall
O.A. 494 Credits Arr. Spring
Special Topics

O.A. 499 6 Credits Spring
Office Practicum (2+10)
Description same as O.A. 299.

PETROLEUM

Pet. 101 3 Credits Fall-Spring
Introduction to the Petroleum Industry (3+0)

exploration through refining. (Prerequisite: freshman standing.)

Pet. 201 3 Credits Fall
Petrophysics (3+0)

Physical properties of reservoir rocks: permeability; relative permeability; surface tension; wettability; porosity; formulation resistivity factor. Properties of petroleum fluids: behavior of gases; solubility of gases; formation volume factor; compressibility; viscosity; phase behavior. (Prerequisite: Math 106 or consent of instructor.)

Pet. 302 3 Credits Spring
Oil Well Design and Production (3+0)
Fundamental principles underlying the analysis, design and engineering of petroleum production systems. (Prerequisites: Phys. 211, math. 201 or permission of the instructor.)

PHILOSOPHY

Phil. 201 3 Credits Fall-Spring
Introduction to Philosophy (3+0)
Terms, concepts, and problems as reflected in writings of great philosophers. (Prerequisites: Engl. 102, sophomore standing, and permission of the instructor.)

Phil. 202 3 Credits Spring
Introduction to Eastern Phil. (3+0)

Basic assumptions, problems conclusions of the major philosophical traditions of the Far East. (Prerequisite: Phil. 201 or permission of the instructor.)

Phil. 204 3 Credits Spring
Introduction to Logic (3+0)

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.)

Phil. 321 3 Credits Fall
Aesthetics (3+0)

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 in 1971.)

Phil. 332 3 Credits Spring
Ethics (3+0)

Examination of ethical theories and basic issues of moral thought. (Offered in alternate years; next offered in 1972.)

Phil. 341 3 Credits Fall
Epistemology (3+0)

The nature of knowledge, truth and certainty. (Prerequisite: Phil. 201. Offered in alternate years, next offered in 1972.)

Phil. 342 3 Credits Spring
Metaphysics (3+0)

The nature of reality comprising both ontology and cosmology. (Prerequisite: Phil. 201. Offered in alternate years, next offered in 1973.)

Phil. 351 3 Credits Fall
History of Philosophy (3+0)

Ancient and medieval periods. (Prerequisite: six credits in philosophy or social science.)

Phil. 352 3 Credits Spring
History of Philosophy (3+0)

Renaissance, modern and recent periods. (Prerequisite: six credits in philosophy or social science.)

Phil. 471 3 Credits Fall-Spring
Contemporary Philosophical Problems (3+0)

Ideological issues facing the modern world. (Prerequisite: nine credits in philosophy or permission of the instructor.)

Phil. 481 3 Credits Fall
Philosophy of Science (3+0)

Comparison and discussion of various contemporary methodological positions. (Prerequisite: junior standing.)

Phil. 482 3 Credits Spring
Comparative Religion (3+0)

Seven world faiths represent answers to questions of man's duty, his destiny and his nature. (Prerequisite: permission of the instructor.)

Phil. 483 3 Credits Spring
Philosophy of Social Science (3+0)

Comparison and analysis of various contemporary methodological positions in the social sciences. (Prerequisite: Junior standing.)

Phil. 484 3 Credits Spring
Philosophy of History (3+0)

Critical examination of the nature of history and historical inquiry. (Prerequisite: nine credits in philosophy or social science.)

Phil. 493 Credits Arr. Fall
Phil. 494 Credits Arr. Spring
Special Topics

Various subjects.

PHYSICAL EDUCATION

P.E. 100 1 Credit Fall-Spring
Physical Education Activities and Instruction (0+3)

Instruction, practice and activity in a variety of physical activities, sports, and dance.

Only P.E. 100 will count toward the four semesters of physical education referred to under General Requirements for Undergraduate Degrees. An activity may be repeated for credit only if the activity is offered on an intermediate or advanced level. Regulation uniforms are required for participation in all activities.

PROFESSIONAL COURSES

(Primarily for Physical Education majors and minors, but others admitted by permission of instructor.)

P.E. 201 2 Credits Fall
Introduction to Health, Physical Education and Recreation (2+0)

A survey course to acquaint students with vocations, academic discipline and programs in health, physical education and recreation.

P.E. 203 1 Credit Fall
Fundamentals of Sports — Tennis and Badminton (0+3)

Skills, rules, strategies and instructional methods in tennis and badminton.

P.E. 205 1 Credit Fall
Fundamentals of Sports — Wrestling (Men) (0+3)

Skills, rules and instructional methods of wrestling.

P.E. 211 1 Credit Fall
Fundamentals of Sports — Volleyball and Soccer (0+3)

Skills, rules, strategies and instructional methods in volleyball and soccer.

P.E. 213 1 Credit Fall
Fundamentals of Sports — Swimming (0+3)

Skills and knowledge of mechanics of basic strokes; water safety; a preparatory course for P.E. 408.

P.E. 214 1 Credit Spring
Fundamentals of Sports — Skiing (0+3)

Skills, knowledge of mechanics, and instructional methods of alpine and cross-country skiing.

P.E. 215 1 Credit Spring
Fundamentals of Sports — Tumbling and Gymnastics (0+3)

Basic skills and knowledge of rules and mechanics in tumbling and apparatus gymnastics events; a preparatory course for P.E. 400. Separate sections for men and women.

- P.E. 216 1 Credit Spring
Fundamentals of Sports —
Rhythms (0+3)
Skills and knowledge of basic patterns of movement; a preparatory course for P.E. 410.
- P.E. 242 3 Credits As demand warrants
Personal and Community Health (3+0)
Development of positive health attitudes; principles and practices of personal and community health.
- P.E. 246 2 Credits As demand warrants
First Aid (2+0)
Knowledge and skills necessary to provide efficient aid and treatment in emergencies.
- P.E. 301 2 Credits Fall
Techniques in Physical Education —
Basketball (Men) (1+3)
Methods of coaching and training basketball teams; strategy, methods and psychology of offense and defense.
- P.E. 302 2 Credits Fall
Techniques in Physical Education —
Track and Field (1+3)
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 2 Credits Spring
Techniques in Physical Education —
Team Sports (Women) (1+3)
Methods and practices, analysis of skills and progressions for selected team sports for women.
- P.E. 304 2 Credits Spring
Techniques in Physical Education —
Winter Sports (1+3)
Methods of teaching skills and coaching teams in snow and ice sports.
- P.E. 308 3 Credits Spring
Physical Education for the
Elementary School (2+3)
(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. (Prerequisites: Ed. 313 and prerequisite thereto.)
- P.E. 311 3 Credits Fall
Principles of Physical
Education (3+0)
Principles and philosophy of physical education; biological, psychological, and sociological foundations of physical education.
- P.E. 321 1 Credit Fall-Spring
Practicum in Physical Education (0+3)
Student serves as student-assistant in P.E. 100 class, or obtains an equivalent experience in a local school or recreation program. (Prerequisite: Approval of the department head. May be repeated — maximum of 4 credits.)
- P.E. 331 2 Credits Fall
Sports Officiating (1+3)
Ethics of sports officiating; mastery, interpretation, and application of sports rules; laboratory consists of game officiating in the intramural program.
- P.E. 332 2 Credits Spring
Intramural Sports (2+0)
Organization, activities and conduct of intramural sports program.
- P.E. 358 3 Credits Spring
History of Physical
Education (3+0)
The position of physical education in successive societies since primitive man, with emphasis on its relation to general education.
- P.E. 400 2 Credits Spring
Techniques in Physical Education —
Tumbling and Gymnastics (1+3)
Methods and practice in teaching tumbling and apparatus gymnastics. Separate men's and women's sections. (Prerequisite: P.E. 215.)
- P.E. 406 3 Credits As demand warrants
Methods of Teaching Physical
Education (3+0)
(Same as Ed. 406)
Selection of materials and presentation methods for secondary school physical education. (Prerequisites: 100 semester hours. Ed. 332 and prerequisites thereto.)

P.E. 408 2 Credits Spring
Techniques in Physical Education —
Aquatics (1+3)

Methods and practice in teaching aquatics skills and sports. (Prerequisite: P.E. 213.)

P.E. 410 2 Credits Spring
Techniques in Physical Education —
Rhythms (1+3)

Methods and practice in teaching rhythmic activities and dance. (Prerequisite: P.E. 216.)

P.E. 421 3 Credits Fall
Physiology of Exercise
(2+3)

Physiological adaptations of the human body to muscular activity in exercise and sports under different environmental conditions. Effects of exercise on circulatory, respiratory, digestive, and nervous systems. Relationships of endurance, training, nutrition, temperature, and altitude to physical performance. (Prerequisite: Biol. 210.)

P.E. 425 3 Credits Fall
Organization and Administration
of Physical Education (3+0)

Philosophy, methodology, and problems of planning organizing and directing the total physical education program at the secondary school level.

P.E. 432 3 Credits Spring
Bio-Mechanics of Exercise
and Sports (3+0)

Mechanics of human movement: mechanical and muscular analysis of human movement patterns, especially in exercise and sports. Anatomical concepts and physical laws applied to joint and muscular action.

P.E. 440 2 Credits As demand warrants
Prevention and Care of Athletic
Injuries (2+1)

Athletic injuries; practical and theoretical aspects of taping, bandaging and massage; physical therapeutic procedures.

P.E. 493 Credits Arranged Fall
P.E. 494 Credits Arranged Spring
Special Topics

PHYSICS

Phys. 103 4 Credits Fall
Phys. 104 4 Credits Spring
College Physics (3+3)

Unified classical and modern physics. (Prerequisite: High school algebra and geometry.)

Phys. 209 3 Credits Fall
Fundamentals of Meteorology (3+0)

(Same as Geog. 209.) An introductory course in meteorology for the non-specialist. Aviation weather will be included. (Prerequisite: High school algebra or permission of the instructor.)

Phys. 211 4 Credits Fall
Phys. 212 4 Credits Spring
General Physics (3+3)

Classical and modern physics using vector calculus. (Prerequisites: Phys. 103 or E.S. 111; Math. 200 and Math. 201 taken concurrently; or permission of instructor.)

Phys. 275 3 Credits Fall
Phys. 276 3 Credits Spring
Astronomy (3+0)

Science elective for the general student. Fall Semester: stellar astronomy, nature of radiation, physical properties and distribution of stars, galactic structure and cosmology. Spring Semester: 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 1 Credit Fall-Spring
Shop Technique (0+3)

Elements of machine tool operations, welding, soldering, glass blowing, high vacuum technique. Rudiments of apparatus construction. Shop project. Enrollment limited. (Prerequisite: permission of the instructor. Offered as demand warrants.)

Phys. 281 1 Credit Fall
Phys. 282 1 Credit Spring
Astronomy Laboratory (0+3)

Laboratory experiments in gravitation, geometric optics, physical optics, radiometry, photoelectricity, spectrophotometry and spectroscopy illustrating and supplementing

Phys. 275, 276. (Prerequisite: sophomore standing; Phys. 281 not required for 282. Offered as demand warrants.)

Phys.	301	3 Credits	Fall
Phys.	302	3 Credits	Spring

Applied Physics (2+3)

Applied physics for non-majors. Electronics, atomic structure and spectra, nuclear structure and reactions. (Prerequisites: Phys. 104, Math. 106 or 122. Offered as demand warrants.)

Phys.	311	4 Credits	Fall
Phys.	312	4 Credits	Spring
Phys.	313	4 Credits	Fall

Classical Physics (4+0)

Mechanics, thermodynamics and statistical physics, fluid physics, and geometrical optics. (Prerequisites: Phys. 212; Math. 202; or permission of instructor. Phys. 311 and 312 are offered in years alternate with 313.)

Phys.	331	3 Credits	Fall
Phys.	332	3 Credits	Spring

Electricity and Magnetism (3+0)

Electrostatics, dielectrics, magnetostatics, magnetic materials, electromagnetism. Maxwell's equations, electromagnetic waves, radiation, physical optics and selected topics from electronics. (Prerequisites: Phys. 212 and Math. 202.)

Phys.	351	3 Credits	Fall
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Introduction to Dynamic Meteorology (3+0)

A mathematical treatment of atmospheric thermodynamics and basic equations of motion. The principles of thermodynamics are applied to the atmospheric system in the theoretical considerations as well as in practical applications. (Prerequisites: Math. 201, Math. 202 taken concurrently. Offered as demand warrants.)

Phys.	381	2 Credits	Fall
Phys.	382	2 Credits	Spring

Physics Laboratory (0+6)

Laboratory experiments in classical and modern physics (Prerequisite: permission of instructor. Phys. 381 and 382 offered in years alternate with Phys. 481 and 482.)

Phys.	411	4 Credits	Fall
Phys.	412	4 Credits	Spring

Modern Physics (4+0)

Relativity, elementary particles, quantum theory, atomic and molecular physics, x-rays, and nuclear physics. (Prerequisites: Phys. 212 and Math. 302 or permission of instructor.)

Phys.	445	3 Credits	Spring
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Solid State Physics and Physical Electronics (3+0)

Theory of matter in the solid state and the interaction of matter with particles and waves. (Prerequisites: Phys. 212, Math. 302 and Math. 314; or permission of instructor.)

Phys.	465	3 Credits	Fall-Spring
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Meteorology (3+0)

Instruments and observations. Introduction to mechanics and thermodynamics of the atmosphere. Weather analysis and forecasting. (Prerequisites: Phys. 104 or 212, Math. 102. Offered as demand warrants.)

Phys.	481	2 Credits	Fall
Phys.	482	2 Credits	Spring

Advanced Physics Laboratory

Advanced laboratory experiments in classical and modern physics. (Prerequisite: permission of instructor. Phys. 481 and 482 are offered in years alternate with Phys. 381 and 382.)

Phys.	485	Credits Arr.	Fall
Phys.	486	Credits Arr.	Spring

Experimental Physics

Projects in experimental physics. (Prerequisites: permission of the instructor.)

Phys.	491	Credits Arr.	Fall
Phys.	492	Credits Arr.	Spring

Physics Seminar

Seminar courses in various topics selected according to needs and interest of students. Primarily for physics majors. (Prerequisite: permission of the instructor.)

Phys.	493	Credits Arr.	Fall
Phys.	494	Credits Arr.	Spring

Special Topics

Various subjects. (Admission by arrangement.)

COURSE DESCRIPTIONS 267

Phys. 603 3 Credits Fall
 Phys. 604 3 Credits Spring
 Introduction to Geophysics (3+0)

(603 same as Geol. 603) A survey of selected topics in the planetary sciences, including introductory material in each of the major research subject areas in geophysics. 603 covers earth science and 604 covers atmospheric and space science.

Phys. 611 3 Credits Fall
 Phys. 612 3 Credits Spring
 Theoretical Physics (3+0)

(Same as Math. 611, 612) Advanced consideration of such topics as transform methods, asymptotic methods, Green's function, Sturm-Liouville Theory, conformal mapping, and calculus of variations with applications to problems arising in physics. (Prerequisites: Math. 320 or 406 and permission of the instructor.)

Phys. 620 3 Credits Fall
 Introduction to Physical
 Oceanography (3+0)

(Same as OCN 620 and Geol. 620.) Physical description of the sea, physical properties of sea water, methods and measurements, boundary processes, currents, tides and waves, regional oceanography. (Prerequisite: science or engineering degree, or permission of the instructor.)

Phys. 621 3 Credits Fall
 Classical Mechanics (3+0)

Lagrange's equations, two-body problem, rigid body motion, special relativity, canonical equations, transformation theory and Hamilton-Jacobi method. (Admission by arrangement.)

Phys. 622 3 Credits Spring
 Statistical Mechanics (3+0)

Classical and quantum statistics of independent particles, ensemble theory, and applications. (Admission by arrangement. Offered in alternate years.)

Phys. 626 3 Credits Spring
 Magnetohydrodynamics and
 Plasma Physics (3+0)

Fundamental equations of magnetohydrodynamics and magnetohydrodynamic waves. Invariants of the motion of a charged particle in a magnetic field. Dynamics of a plasma, plasma waves. (Admission by arrangement.)

Phys. 627 3 Credits Fall-Spring
 Plasma Physics (3+0)

Wave propagation in hot, homogeneous plasmas; loss cone instabilities; advanced particle orbit theory; wave phenomena and instabilities in inhomogeneous plasmas with complex geometries including drift and flute modes; quasi-linear theory and plasma disturbance.

Phys. 631 3 Credits Fall
 Phys. 632 3 Credits Spring
 Electromagnetic Theory (3+0)

Electrostatics, magnetostatics, Maxwell's equations, and potentials. Lorentz equations, field energy, gauge conditions, retarded potentials, waves, radiation, tensor formulations, and non-Maxwellian electrodynamics. (Admission by arrangement.)

Phys. 642 3 Credits Fall-Spring
 Radio Physics (3+0)

Selected topics from ionospheric absorption, diffraction, and scattering of radio waves. (Admission by arrangement. Offered as demand warrants.)

Phys. 651 3 Credits Fall
 Phys. 652 3 Credits Spring
 Quantum Mechanics (3+0)

Schrodinger's equations, operator formalism, correspondence principle, central force problems, perturbation theory, quantum-statistic mechanics and applications of quantum mechanics to collision problems, radiation and spectroscopy. (Admission by arrangement. Offered in alternate years.)

Phys. 657 3 Credits Fall
 Phys. 658 3 Credits Spring
 Seismology (3+0)

(Same as Geol. 657, 658) Propagation of elastic waves in layered media. (Admission by arrangement.)

Phys. 660 3 Credits Fall-Spring
Theoretical Geophysics (3+0)

(Same as Geol. 660) Selected topics in theoretical geophysics, mainly in solid earth physics, seismology, and geomagnetism. (Admission by arrangement. Offered as demand warrants.)

Phys. 661 2 Credits Spring
Physics and Chemistry of the Upper Atmosphere (2+0)

Aerostatics, composition, kinetic theory. Properties, viscosity, thermal conductivity and diffusion. Escape. Solar radiation. Absorption. Dissociation and ionization. Positive and negative ions. Recombination, attachment and detachment. Ozone, hydroxyl, and hydrogen. The airglow. (Admission by arrangement. Offered as demand warrants.)

Phys. 663 2 Credits Spring
The Geomagnetic Field (2+0)

The main field at the earth's surface. Spherical harmonic analysis; the field within the earth; the field outside the earth; the secular magnetic variation; paleomagnetism; the dynamo theory of the field and its secular variation; distortion of the outer field by electric currents associated with magnetic disturbance. (Admission by arrangement. Offered as demand warrants.)

Phys. 664 2 Credits Fall-Spring
Geomagnetic Disturbance and the Aurora (2+0)

The morphology, statistics, solar and ionospheric associations of magnetic disturbances; indices of disturbance; auroral phenomena; theories of magnetic disturbance and the aurora. (Admission by arrangement. Offered as demand warrants.)

Phys. 665 3 Credits Fall-Spring
Dynamic Meteorology (3+0)

Atmospheric statics, thermodynamics, radiation, and dynamics; atmospheric turbulence; general circulation; perturbation theory. (Admission by arrangement. Offered as demand warrants.)

Phys. 667 3 Credits Fall-Spring
Theoretical Astrophysics (3+0)

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. 671 2 Credits Fall-Spring
Space Physics (2+0)

Radiation belts, motions and magnetic fields of trapped particles, geomagnetic storm effects and primary auroral particles. (Admission by arrangement. Offered as demand warrants.)

Phys. 674 3 Credits Spring
Environmental Hydrodynamics (3+0)

(Same as OCN 674 and C.E. 674) Mechanics of fluids on a rotating earth. Navier-Stokes equations, boundary layer phenomena, turbulent flow, and applications of hydrodynamics to motion of stratified fluids such as the atmosphere and ocean.

Phys. 675 3 Credits Fall-Spring
Radio Astronomy (3+0)

Survey of instruments and techniques, radio wave generation and propagation in ionized media, solar radio waves, cosmic radio waves, effects of the troposphere on extra-terrestrial radio waves, radar astronomy. (Admission by arrangement. Offered as demand warrants.)

Phys. 677 Credits Arr. Fall
Phys. 678 Credits Arr. Spring
Atomic and Molecular Processes

Selected topics in collision theory, radiation theory, atomic and molecular structure and reactions, and experimental techniques of atomic and molecular physics. (Admission by arrangement. Offered as demand warrants.)

Phys. 685 Credits Arr. Fall
Phys. 686 Credits Arr. Spring
Experimental Physics

Advanced work in experimental physics. (Admission by arrangement.)

Phys. 690 0 Credits Fall-Spring
Colloquium

Phys. 691 Credits Arr. Fall
Phys. 692 Credits Arr. Spring
Seminar

Various topics. (Admission by arrangement.)

Phys. 693 Credits Arr. Fall
Phys. 694 Credits Arr. Spring
Special Topics

Special topics given by staff or visiting scholars in subjects of current interest. At least one course is offered each semester.

Phys. 697 Credits Arr. Fall
 Phys. 698 Credits Arr. Spring
 Thesis or Dissertation

POLICE ADMINISTRATION PROGRAM

P.A. 110 3 Credits Fall
 Introduction to Criminal Justice (3+0)

A study of the agencies and processes involved in the Criminal Justice system — the legislature, the police, the prosecutor, the courts and corrections. An analysis of the role and the problems of law enforcement in a democratic society.

P.A. 150 3 Credits Fall-Spring
 Police Administration (3+0)

Principles of police administration and organization as applied to staff and line units. An analysis of their functions and activities, including record keeping, report writing, and the application of the computer. Offered in alternate years.

P.A. 151-C 3 Credits Fall-Spring
 Introduction to Criminology
 (Correspondence Study Only)

Study of the major areas of deviant behavior and relationship to society, law and law enforcement.

P.A. 156-C 3 Credits Fall-Spring
 Patrol Procedures
 (Correspondence Study Only)

Responsibilities, techniques, and methods of police work; computer orientation.

P.A. 159-C 3 Credits Fall-Spring
 Organization, Management, & Administration
 (Correspondence Study Only)

An integrated study of the composition and functions of organizations, principles and problems of management and supervision; the role of administrator, including report writing.

P.A. 251 3 Credits Fall-Spring
 Criminology (3+0)

The study of the major areas of deviant behavior and its relationship to society, law, and law enforcement, including the theories of crime causation.

P.A. 252 3 Credits Fall
 Criminal Law (3+0)

A study of the elements, purposes, and functions of the substantive criminal law; with emphasis upon historical and philosophical concepts.

P.A. 254 3 Credits Spring
 Procedural Law
 (Criminal Procedure)(3+0)

Emphasis upon the legal limitations of the police and the right of the people to be secure from the government under the protections of the Constitution and the Rules of Evidence.

P.A. 255 3 Credits Fall-Spring
 Criminal Investigation (3+0)

Fundamentals of investigation; crime scene search and recording; collection and preservation of physical evidence; scientific aids; modus operandi; sources of information; interviews and interrogation; follow-up and case preparation. Offered in alternate years.

P.A. 257 3 Credits Fall-Spring
 Traffic Safety (3+0)

A study of traffic hazards and theoretical and practical aspects of traffic safety programs such as vehicle and highway design, regulation and control, education and enforcement. Offered in alternate years.

P.A. 258 3 Credits Fall-Spring
 Juveniles and the Law (3+0)

The role of agencies under the law in regard to the juvenile, with special attention to the role of law enforcement. Both theoretical and practical aspects will be studied. Offered in alternate years.

POLITICAL SCIENCE

P.S. 101 3 Credits Fall
 P.S. 102 3 Credits Spring

Introduction to American Government
 and Political Science (3+0)

U.S. Constitution and its philosophy; evolution of the branches of government; political process; contemporary political issues; goals, methods, and levels of government.

- P.S. 201 3 Credits Fall**
Comparative Politics: Methods of Political Analysis (3+0)
 Modern methods of analyzing political behavior and processes on a cross-national basis; emphasis is placed on the roles of executive, legislative and judicial systems, political parties and pressure groups, and current concepts of political development. Special application is made to three democratic European countries.
- P.S. 202 3 Credits Spring**
Comparative Politics: Contemporary Doctrines and Structures (3+0)
 Conflicting approaches to the solution of social and political problems are reviewed with particular emphasis on nations employing various forms of communism, socialism, facism, or contemporary concepts of "tutelary" or "controlled" democracy.
- P.S. 211 3 Credits Fall-Spring**
State and Local Government (3+0)
 Organization and politics of state and local government in the United States; the Alaska constitution; problems of statehood in Alaska. (Prerequisite: P.S. 101.)
- P.S. 259 3 Credits Fall-Spring**
Administrative Concepts (3+0)
 Exposition of basic theory, principles and practices of public administration, especially as it applies to municipal agencies. Theoretical aspects of factors such as policy-formation and decision-making in a public agency. (Offered in alternate years.)
- P.S. 301 3 Credits Fall-Spring**
Public Administration in the Political Process (3+0)
 Techniques and problems of administering public policy. The changing role of the executive branch in the political process. (Prerequisite: P.S. 101.)
- P.S. 315 3 Credits Fall**
The American Political Tradition (3+0)
 The origin, nature and development of basic ideas that constitute the mainstream of the American political tradition. Debates of the constitutional Convention; nature of the Union; the Progressive movement. Present trends in American political thought. Effects on legislative and judicial decisions. (Prerequisites: History 131-132 strongly recommended.)
- P.S. 318 3 Credits Fall-Spring**
Studies in the New Politics (3+0)
 Survey of the history, development, ideologies and programs of groups such as the "hippies," student militants, black power activists and religious movements with neo-political overtones.
- P.S. 321 3 Credits Fall**
P.S. 322 3 Credits Spring
International Politics (3+0)
 Introduction to the international political process; an appraisal of the nation-state, the evolution of the international system, and the dynamics of foreign policy formation; a survey of international relations theory, including classical, geopolitical and behavioral approaches. Second semester continuation with special attention to international law and organization, international political integration, and arms control and disarmament.
- P.S. 332 3 Credits Fall-Spring**
International Law and Organization (3+0)
 Development, structure, policies and problems of public international law and organizations. Accomplishments and limitations of universal and regional organizations and law.
- P.S. 342 3 Credits Fall-Spring**
Contemporary China (3+0)
 Historical perspective; communism's rise to power; sino-soviet relations, the cultural revolution, significance of Maoism; a case study in comparative political analysis.
- P.S. 361 3 Credits Fall-Spring**
Latin American Governments and Politics (3+0)
 A survey of Latin American political structures and processes emphasizing executive, legislative and judicial systems; political parties and pressure groups; political activities of students, labor unions and agricultural workers' groups; plus consideration of class conflicts, militarism and church-state problems.
- P.S. 401 3 Credits Fall**
P.S. 402 3 Credits Spring
Political Behavior (3+0)
 Behavior of political organizations, parties, groups, politicians and individual citizens. (Prerequisites: P.S. 101, 102.)

P.S. 411 3 Credits Fall
P.S. 412 3 Credits Spring

Political Theory (3+0)

Ancient, classical, medieval and modern political concepts, and their effects on political behavior.

P.S. 415 3 Credits Fall-Spring
Recent Political Thought (3+0)

A discussion of the contributions of modern thinkers to political theory.

P.S. 434 3 Credits Fall-Spring
American Constitution (3+0)

Role of the judiciary in the American political system viewed both historically and through analysis of leading cases. (Prerequisite: P.S. 101.)

P.S. 475 3 Credits Fall-Spring
Internship in Public Affairs (3+0)

Designed to give carefully selected undergraduates and/or graduates the opportunity to do practical and meaningful work with governmental agencies or civic action groups. Admission by permission of the instructor.

P.S. 491 Credits Arranged Fall
P.S. 492 Credits Arranged Spring
Seminar

P.S. 493 Credits Arr. Fall
P.S. 494 Credits Arr. Spring
Special Topics

P.S. 601 3 Credits
Public Administration in the Political Process (3+0)

Political factors which condition the structure and functioning of administration; public interest; agency constituencies; administration's place in the political and social system.

P.S. 610 3 Credits
Administrative Theory and Behavior (3+0)
Role of the administrator; theories of complex organizations and their administration; administrative leadership; ethics.

P.S. 612 3 Credits
Administrative Management (3+0)

A study of budgeting, personnel and financial management systems in public-oriented

organizations. Decision-making, communication, automation, operations research and systems analysis.

P.S. 615 3 Credits
Comparative Administration (3+0)

Administration in developing areas; techniques of comparative administration applied to Alaska's problems; administrative organization as one of the keys to political, social and economic development; circumstances under which political and administrative change occurs, especially in developing societies; intercultural aspects of development administration; impact of government on development.

P.S. 618 3 Credits
Accountability, Law and the Administrative Process (3+0)

The problem of maintaining a responsive bureaucracy subject to democratic controls; implications of administrative due process of law; selected case studies in state and federal administration.

P.S. 620 3 Credits
Administrative Internship (3+0)

Required only of students lacking administrative experience. This shall consist of part-time work in an approved federal, state or local agency, to be supervised by a senior employee of that agency in cooperation with a faculty advisor.

P.S. 625 3 Credits
Economics and Public Policy (3+0)

An examination of economics in relation to public policy, both as a determinant of policy and a tool of administration.

P.S. 630 3 Credits
Administrative Problems in Alaska (3+0)

Rural and small city administration; impact of government on the economy; fiscal management policies; technical assistance, loans and subsidies, contracts, public enterprise; resource administration.

P.S. 632 3 Credits
Financial Management (3+0)

Role of budget in determination of policy; administrative integration and control of

budget operations; relation between PPBS and line-item, program and performance types of budgets; selected aspects of public finance administration; national and international policies and practices.

P.S. 634 3 Credits

Natural Resources Administration (3+0)

Growth of the concept of conserving and developing natural resources; translation into public policy, interrelationships and coordination among principal state and federal resource administration agencies; development and ecology, interest groups affecting resource development.

P.S. 689 3 Credits

Scope, Methods and Techniques of Research in Public Administration (3+0)

A comprehensive review of the literature in the field of public administration and an in-depth examination of the various methods and techniques employed by those who research and write utilizing these disciplinary tools.

P.S. 693 Credits Arr.

P.S. 694 Credits Arr.

Special Topics

Each student shall be permitted to undertake the investigation of an administrative problem which falls within the scope of his individual program. The topic shall be approved by the student's advisory committee. The investigation and written report shall be conducted under the auspices of a designated member of the faculty.

P.S. 697 Credits Arr.

P.S. 698 Credits Arr.

Thesis Research

Each student shall be permitted to design and complete a thesis which shall test the candidate's capacity to undertake independent research and to apply the knowledge and skills acquired during his graduate program. The topic shall be approved by the student's major professor and his advisory committee. The student shall be examined on the thesis by a faculty committee as prescribed in the Manual of Procedures and Information for Graduate Students.

PSYCHOLOGY

Psy. 101 3 Credits Fall-Spring

Introduction to Psychology (3+0)

Fundamentals of general psychology. Human behavior: genetic, motivation, learning, sensations, perception, personality.

Psy. 110 1 Credit As demand warrants

Group Experience Laboratory (0+2)

Designed for the individual without previous group laboratory experience. The group setting offers an opportunity for individuals to evaluate themselves, their feelings, their impact on others, and their ability to communicate effectively. A climate of trust and intimacy permits members to gain insight into their relationships with other people.

Psy. 153 3 Credits

Spring

Human Relations (3+0)

An applied approach to the aspects of human behavior that are of basic importance to an understanding of self and others with emphasis upon functional experiences to aid the students in acquiring and improving skills in interpersonal situations.

Psy. 201 3 Credits

Fall

Advanced General Psychology (3+0)

The theory and methods of psychology, including the scope and limitations of the science. Major emphasis in the areas of experimental, statistical, physiological, clinical, and social analysis of behavior. (Prerequisites: Psy. 101.)

Psy. 202 3 Credits As demand warrants

Psychology of Adjustment (3+0)

Application of psychological principles to the problems of everyday life. Course focus will be an emphasis on the analysis of developmental life style adjustment patterns. Mechanics of adjustment will be demonstrated by various practicum assignments. (Prerequisite: Psy. 101 or by approval of the instructor.)

Psy. 209 3 Credits

Fall

Social Psychology (3+0)

Social influences on human behavior. (Prerequisite: 6 hours in Psy. and/or Soc.) Offered only at Juneau-Douglas Community College.

Psy. 210 1 Credit As demand warrants
Advanced Group Experience
Laboratory (0+2)

Designed for individuals with previous group laboratory experience. An experiential and didactic approach to the resolution of personal and educational concern with emphasis on the techniques of psychodrama, Gestalt therapy, and group encounter. Responsibility for behavior, patterns of interpersonal communication, and awareness of feelings will be explored.

Psy. 223 3 Credits As demand warrants
Introduction to Counseling (3+0)

Basic principles of counseling, elementary concepts of individual and group relationships. A theoretical and practical familiarity with various counseling goals, identification of symptoms, and referrals.

Psy. 245 3 Credits Fall-Spring
Child Development (2+3)
(Same as H.E. 245.)

Theory and laboratory of human mental, emotional, social, and physical development. (Prerequisites: Psy. 101, 45 semester hours, and permission of the instructor.)

Psy. 246 3 Credits Fall-Spring
Adolescence (2+3)
(Same as Soc. 246)

Intellectual, 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. 201, 45 semester hours, and permission of the instructor. Soc. 101 is recommended.)

Psy. 251 3 Credits Fall-Spring
Introductory Statistics for
Behavioral Sciences (3+0)
(Same as Soc. 251)

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. (Prerequisite: Psy. 201.)

Psy. 261 3 Credits Fall
Introduction to Experimental
Psychology (2+3)

Introduction to and laboratory application of the experimental methods to some problems of psychology using both human and animal

subjects. (Prerequisite: Psy. 201, 251. Psy. 251 and 261 may be taken concurrently.)

Psy. 301 3 Credits Fall
History and Systems of
Psychology (3+0)

Development of psychological thought with an emphasis on experimental and theoretical areas from the early Greeks to the present. (Prerequisite: Psy. 201.)

Psy. 302 3 Credits Spring
Social Psychology (3+0)
(Same as Soc. 302)

An analysis of inter-group relationships in terms of process and value orientation, their influences on the personality, and the various aspects of collective behavior on group and person. (Prerequisites: Psy. 201 and/or Soc. 101, 102.)

Psy. 331 3 Credits Fall
Industrial Psychology (3+0)

Job and worker analysis, selection, training, fatigue, worker adjustment, morale, labor-management relations. (Prerequisite: Psy. 201. Offered alternate years; next offered 1973.)

Psy. 338 3 Credits Spring
Abnormal Psychology (3+0)

Abnormalities of human behavior. (Prerequisites: Psy. 201.)

Psy. 362 3 Credits Spring
Intermediate Experimental
Psychology (2+3)

Training in the design, instrumentation, and execution of experiments with human and animal subjects. Major emphasis in the areas of learning, motivation, and perception. (Prerequisites: Psy. 201, 261.)

Psy. 373 3 Credits Fall
Psychological Testing (3+0)

Standardized psychological tests in various applied areas; administration, scoring, and interpretation of established tests. (Prerequisites: Psy. 201, 261.)

Psy. 406 3 Credits Spring
Theories of Personality (3+0)

Current psychological theories, with a critical examination of the different approaches used in theory construction. (Prerequisites: Psy. 201, 338.)

- Psy. 407 3 Credits Fall**
Motivation (3+0)
 Survey of theory and research on reinforcement, punishment, frustration, preference, instinctual mechanisms, and other factors "controlling" the performance of organisms. (Prerequisites: Psy. 201, 261. Offered alternate years; next offered 1972.)
- Psy. 433 3 Credits Spring**
Clinical Psychology (3+0)
 Elementary course in methods of clinical psychology with consideration of psychological assessment and psychological approaches to treatment. (Prerequisite: Psy. 201. Offered alternate years. Next offered 1973.)
- Psy. 464 3 Credits Spring**
Learning (3+0)
 A study of the major theories of conditioning and learning, and a survey of current literature concerning classical conditioning and instrumental learning in humans and animals. (Prerequisites: Psy. 201, 261. Offered alternate years; next offered 1973.)
- Psy. 465 3 Credits Fall**
Comparative and Physiological Psychology (3+0)
 An introduction to physiological, chemical, and neural principles basic to human and animal behavior. Review of current literature in the field. (Prerequisites: Psy. 201, 261. It is recommended that Biol. 105 and 106 be taken prior to Psy. 465. Offered alternate years; next offered 1972.)
- Psy. 466 3 Credits Spring**
Perception (3+0)
 Current literature and theoretical models of perception emphasizing the physiological, developmental, and social effects on interpretation of sensory processes. (Prerequisites: Psy. 201, 261. Offered alternate years; next offered 1973.)
- Psy. 473 3 Credits Fall**
Social Science Research Methods (3+0) (Same as Soc. 473)
 Techniques of social research; sampling, questionnaire construction, interviewing and data analysis in surveys; field and laboratory experiments; attitude scaling. (Prerequisites: Psy. 251 and prerequisites thereto.)
- Psy. 492 2 Credits Spring**
Seminar in Human Behavior (2+0)
 (Same as Soc. 492)
 Integrated behavioral approach emphasizing the major sociological and psychological theories with special attention to current literature. (Prerequisite: senior standing in psychology or sociology.)
- Psy. 493 Credits Arr. Fall**
Psy. 494 Credits Arr. Spring
Special Topics
 Various subjects. (Admission by arrangement.)
- Psy. 623 3 Credits As demand warrants**
Principles of Individual Counseling (3+0)
 (Same as Ed. 623)
 Counseling techniques and procedures in education, social work, and on a limited basis, clinical psychology; their applications by the classroom teacher and a guidance specialist in assisting students with adjustment problems within a normal range. (Prerequisites: Ed. 426, Psy. 338 or 406 and permission of the instructor.)
- Psy. 624 3 Credits As demand warrants**
Group Counseling (3+0)
 (Same as Ed. 624)
 Kinds and types of groups with emphasis on methods, problems and needed skills in working with groups in a counseling situation. (Prerequisites: Ed. 426, 623.)
- Psy. 628 3 Credits As demand warrants**
Analysis of the Individual (3+0)
 (Same as Ed. 628)
 Means of acquiring data pertinent to the individual. Interpreting data and formulating case reports conducive to greater understanding. (Prerequisite: Ed. 426.)
- Psy. 629 3 Credits As demand warrants**
Individual Tests of Intelligence (3+0)
 (Same as Ed. 629.)
 Individual intelligence tests with emphasis on the Revised Stanford-Binet Intelligence Scale and the Wechsler Intelligence Scales. (Prerequisites: Ed. 332 and permission of the instructor.)

COURSE DESCRIPTIONS 275

Psy. 630 3 Credits As demand warrants
Laboratory in Individual Tests
of Intelligence (0+9)
(Same as Ed. 630)

Provides laboratory experience in administration of the Revised Stanford-Binet Intelligence Scale or the Wechsler Intelligence Scales. (Prerequisites: Ed. 629 and permission of the instructor.)

Psy. 632 3 Credits As demand warrants
Occupational Information (3+0)
(Same as Ed. 632)

Principles and practices of vocational guidance. Explains process of choosing a vocation, theories of vocational choice, sources and dissemination of occupational information. (Prerequisites: graduate standing, Ed. 426, and permission of the instructor.)

Psy. 634 1-3 Credits Arranged
Counseling Practicum
(Same as Ed. 634)

Provides supervised field experience, including preparatory activities in an educational and agency setting. (Prerequisite: Approval of instructor. May be repeated for a maximum of 6 credits.)

Psy. 697 Credits Arr. Fall
Psy. 698 Credits Arr. Spring
Thesis

RUSSIAN

Russ. 101 5 Credits Fall
Russ. 102 5 Credits Spring
Elementary Russian (5+0)

Development of the four skills (listening comprehension, speaking, reading, and writing) with emphasis on oral work, practice in the language laboratory, basic grammar, and vocabulary.

Russ. 105 3 Credits Fall
Russ. 106 3 Credits Spring
Russ. 107 3 Credits Spring
Elementary Russian (3+0)

Same course content as Russ. 101 and 102 but with the year sequence divided into three courses rather than two. (Course not offered on main campus at College.)

Russ. 111 3 Credits Fall
Russ. 112 3 Credits Spring
Russian for Reading Ability (3+0)

Rapid acquisition of reading knowledge with attention to needs in specialized fields. Credit applicable to degrees requiring one year of a foreign language with emphasis on reading skill.

Russ. 201 3 Credits Fall
Russ. 202 3 Credits Spring
Intermediate Russian (3+0)

Continuation of Russ. 102. Increasing emphasis on reading ability and cultural materials. Conducted in Russian. (Prerequisite: Russ. 102 or two years of high school Russian.)

Russ. 301 3 Credits Fall
Russ. 302 3 Credits Spring
Advanced Russian (3+0)

Discussions and essays on more difficult subjects or texts; translations, stylistic exercises, special grammatical problems, systematic vocabulary building. Conducted in Russian. (Prerequisite: Russ. 202 or instructor's permission.)

Russ. 321 3 Credits Fall
Russ. 322 3 Credits Spring
Studies in Russian Literature (3+0)

Choice of authors, genres, or periods of Russian literature for intensive study. Conducted in Russian. (Prerequisite: Russ. 202 or equivalent. Students may repeat course for credit when topic varies.)

Russ. 351 3 Credits Fall
The Russian Novel (3+0)

The Russian novel of the nineteenth and twentieth centuries. Study of novels by Pushkin, Lermontov, Gogol, Turgenev, Dostoevsky and Solzhenitsyn. A lecture course conducted in Russian. (Prerequisite: Russ. 202 or equivalent. Next offered Fall 1972.)

Russ. 362 3 Credits Spring
Russian Drama (3+0)

Russian Drama from its origins to the present. Study of plays by Karamzin, Gogol, Griboedov, Dostoevsky, Turgenev, Chekhov, Gorky and Mayakovsky. Conducted in Russian. (Prerequisite: Russ. 202 or equivalent. Next offered 1972.)

- Russ. 493 Credits Arr. Fall
 Russ. 494 Credits Arr. Spring
Special Topics
 Various subjects for advanced students.
 (Admission by arrangement. Offered as demand
 warrants.)

SOCIOLOGY

- Soc. 101 3 Credits Fall-Spring
Introduction to Sociology (3+0)
 An introduction to the science of man as a
 social animal, emphasizing the social processes
 which give rise to and shape man's language,
 experiences, perception, meaning and behavior.
 An attempt is made to construct an interaction
 framework to be used in understanding and
 predicting human behavior.
- Soc. 102 3 Credits Fall-Spring
Introduction to Sociology (3+0)
 A continuation of Soc. 101. (Prerequisite: Soc.
 101.)
- Soc. 106 3 Credits Fall-Spring
Social Welfare (3+0)
 Functions and development of modern social
 welfare and the distinctive features of the field,
 designed primarily to assist in the
 understanding of social welfare problems and
 services. (Prerequisite: Soc. 101.)
- Soc. 109 3 Credits As demand warrants
Principles of Case Work (3+0)
 An introductory study of case work and group
 work theory, techniques of interviewing and
 recording, and a review and analysis of case
 history.
- Soc. 201 3 Credits Fall
Social Problems (3+0)
 Problems of contemporary society; analysis of
 factors giving rise to them. (Prerequisites: Soc.
 101, 102.)
- Soc. 203 3 Credits Fall
Juvenile Delinquency (3+0)
 A conceptual approach to deviant and
 delinquent behavior, contributing social
 problems, adolescence as a subculture with
 emphasis on the juvenile code ordinance and
 treatment procedure. (Prerequisite: Soc. 101,
 102. Offered only at ACC.
- Soc. 205 3 Credits Fall
**Group Processes in Modern
 Society (3+0)**
 Formation, structure and functioning of
 groups; group processes and group products;
 implications of various research techniques.
 (Prerequisites: Soc. 101, 102.)
- Soc. 207 3 Credits Fall
Population (3+0)
 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. (Prerequisites: Soc. 101,
 102.)
- Soc. 210 3 Credits As demand warrants
Principles of Correction (3+0)
 An introduction to the basic concepts of
 probation and parole; the use of authority in
 corrective services; institutional treatment
 methods, a study of popular and professional
 concepts in correction.
- Soc. 212 3 Credits Fall
**Black Americans in Contemporary
 Society (3+0)**
 An examination and analysis of the black
 subculture in the United States with special
 attention to: the historical overview, theoretical
 applications, and consideration of alternatives.
- Soc. 215 3 Credits As demand warrants
Race Relations (3+0)
 An analytic approach to variations in
 subculture norms and values, communication
 difficulties, and emergent identities and
 self-images of minority groups in America.
 Problems of transcultural adjustment, the
 change of social, economic, and political status
 of minority groups. (Prerequisite: Soc. 101,
 102). Offered only at ACC.
- Soc. 222 3 Credits As demand warrants
Community Organization (3+0)
 A conceptual approach to group structure and
 stratification in society; basic patterns of social
 organization and relationships of individuals
 and groups that sustain form, special interest
 groups, and life styles in a community. Offered
 only at ACC.

Soc. 242 3 Credits Spring
The Family (3+0)

A study of the contemporary patterns of marriage and family relationships in the U.S. A social psychological approach to factors associated with the life cycle of the family, including mate selection, marital interaction and adjustment, parent-child relationships, and the later years of married life. (Prerequisites: Soc. 101, 102.)

Soc. 246 3 Credits Fall-Spring
Adolescence (2+3)
 (Same as Psy. 246)

Intellectual, 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. 201, 45 semester hours, and permission of the instructor. Soc. 101 is recommended prior to Soc. 246.)

Soc. 251 3 Credits Fall-Spring
Introductory Statistics for Behavioral Sciences (3+0)
 (Same as Psy. 251)

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. (Prerequisite: Soc. 101.)

Soc. 302 3 Credits Spring
Social Psychology (3+0)
 (Same as Psy. 302)

An analysis of inter-group relationships in terms of process and value orientation, their influences on the personality, and the various aspects of collective behavior on group and person. (Prerequisites: Psy. 201 and/or Soc. 101, 102.)

Soc. 304 3 Credits Spring
Culture and Personality (3+0)

An examination of cultural value systems and social institutions as they bear on the formation of personality. Types of behavior patterns relevant to personality formation. (Prerequisites: Soc. 101, 102.)

Soc. 309 3 Credits Fall
Urban Sociology (3+0)

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. (Prerequisites: Soc. 101, 102.)

Soc. 310 3 Credits Spring
Sociology of Later Life (3+0)

A comparative analysis of the social status and role of the aging in various societies with emphasis on problems of aging in contemporary U.S. (Prerequisites: Soc. 101, 102. Offered alternate years; next offered 1973.)

Soc. 333 3 Credits Fall
Social Welfare as a Social Institution (3+0)

Historical development and survey of social services and social work practice as these affect human needs: economic security, child welfare, family service programs, health agencies, correctional agencies, community organization programs. (Prerequisites: Soc. 101, 102, 201.)

Soc. 336 3 Credits Spring
Social Work Methods (3+0)

The scope and principles of modern social work. Description of the three major methods of social work; casework, group work, and community organization. Preparation for further study in the field and for preliminary work in it. (Prerequisites: Psy. 101, Soc. 333, or permission of the instructor.)

Soc. 343 3 Credits Fall
Sociology of Deviant Behavior (3+0)

A study of the social etiology of deviant behavior, both criminal and noncriminal with an emphasis on the nature of group interaction, and an examination of the institutions involved. (Prerequisites: Soc. 101, 102.)

Soc. 345 3 Credits Fall
Sociology of Education (3+0)
 (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. 347 3 Credits Fall
Sociology of Religion (3+0)

The study of the historical development and functional significance of religion, values, and norms of institutions, groups and reform movements and their influence on social organization. (Prerequisites: Soc. 101, 102. Offered alternate years; next offered 1972.)

Soc. 363 3 Credits Fall
Social Stratification (3+0)

The study of the differential distribution of social power, privilege and life chances in class and caste as the basis for social organization. Emphasis on occupational, educational and other correlates which determine social structure. (Prerequisites: Soc. 101, 102.)

Soc. 383 3 Credits Fall-Spring
Field Observation
(To be Arranged)

Introduction to the services of community agencies to provide a better understanding of the role and programs of social agencies and their services. It is designed to assess the students' interest in and motivation for a career in the social services. The serious student can obtain credit for two semesters work in this course. Four to six hours a week in approved social agencies. (Prerequisites: Soc. 336 or concurrently with Soc. 336 and permission of the instructor.)

Soc. 402 3 Credits Spring
Theories of Sociology (3+0)

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. (Prerequisite: Psy. 302 or Soc. 302.)

Soc. 405 3 Credits Fall
Social Change (3+0)

Social change in long-time perspective, with emphasis on social movements and the influence of technology. (Prerequisites: Soc. 101, 102.)

Soc. 406 3 Credits Spring
Human Ecology (3+0)

Modern industrial and centralized society; institutional structure of community life — political, economic, religious — with reference

to internal structure and external sources of control and domination, with some emphasis on the nature of ruralism. (Prerequisites: Soc. 101, 102. Offered alternate years; next offered 1973.)

Soc. 407 3 Credits Spring
Formal Organizations (3+0)

Theory and analysis of large-scale, complex, modern organizations, their coordination, role and status inter-relationships, and their publics. (Prerequisite: Soc. 101.)

Soc. 408 3 Credits Spring
American Minority Groups (3+0)

Present status of ethnic, religious and national minorities and their changing sociological, economic, and political status.

Soc. 473 3 Credits Fall
Social Science Research Methods (3+0)
(Same as Psy. 473)

Techniques of social research; sampling, questionnaire construction, interviewing and data analysis in surveys; field and laboratory experiments; attitude scaling. (Prerequisite: Psy. 251 or Soc. 251.)

Soc. 492 2 Credits Spring
Seminar in Human Behavior (2+0)

Integrated behavioral approach emphasizing the major sociological and psychological theories with special attention to current literature. (Prerequisite: senior standing in psychology or sociology.)

Soc. 493 Credits Arr. Fall

Soc. 494 Credits Arr. Spring

Special Topics

Various subjects. (Admission by arrangement.)

SPANISH

Span. 101 5 Credits Fall

Span. 102 5 Credits Spring

Elementary Spanish (5+0)

Development of the four skills (listening comprehension, speaking, reading, and writing) with emphasis on oral work, practice in the language laboratory, basic grammar, and vocabulary.

COURSE DESCRIPTIONS 279

Span.	105	3 Credits	Fall
Span.	106	3 Credits	Spring
Span.	107	3 Credits	Spring

Elementary Spanish (3+0)

Same course content as Span. 101 and 102 but with the year sequence divided into three courses rather than two. (Course not offered on main campus at College.)

Span.	201	3 Credits	Fall
Span.	202	3 Credits	Spring

Intermediate Spanish (3+0)

Continuation of Span. 102. Increasing emphasis on reading ability and cultural material. Conducted in Spanish. (Prerequisite: Span. 102 or two years of high school Spanish.)

Span.	203	2 Credits	Fall
Span.	204	2 Credits	Spring

Composition and Conversation (2+0)

Supplements Span. 201, 202 stressing written and oral practice. Conducted in Spanish. (Concurrent enrollment in Span. 201 or 202 recommended. Prerequisite: Span. 102 or equivalent.)

Span.	301	3 Credits	Fall
Span.	302	3 Credits	Spring

Advanced Spanish (3+0)

Discussions and essays on more difficult subjects or texts, translations, stylistic exercises, special grammatical problems, systematic vocabulary building. Conducted in Spanish. (Prerequisite: Span. 202 or equivalent. Next offered 1971-72.)

Span.	313	3 Credits	Fall
Span.	314	3 Credits	Spring

Spanish Civilization (3+0)

History, development of the arts and of national institutions; extensive reading and classroom discussion. Conducted in Spanish. (Prerequisite: Span. 202. Next offered 1973-74.)

Span.	321	3 Credits	Fall
Span.	322	3 Credits	Spring

Studies in Spanish Literature (3+0)

Choice of authors, genres, or periods of Spanish literature for intensive study. Conducted in Spanish. Students may repeat course for credit when topic varies. (Prerequisite: Span. 202 or equivalent. Next offered 1972-73.)

Span.	437	3 Credits	Fall
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Literature of the Golden Age (3+0)

Close study of outstanding literary works in different genres. Conducted in Spanish. (Next offered 1972-73.)

Span.	447	3 Credits	Fall
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20th Century Literature (3+0)

Analysis primarily of the post-war novel and poetry. (Next offered 1971-72.)

Span.	448	3 Credits	Spring
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Spanish American Literature (3+0)

Critical reading of selected literary works and introduction to major literary movements in Spanish America. (Next offered 1971-72.)

Span.	493	Credits Arr.	Fall
Span.	494	Credits Arr.	Spring

Special Topics

Various subjects for advanced students. (Admission by arrangement. Offered as demand warrants.)

SPEECH COMMUNICATION

Sp.C.	51	2 Credits	Fall-Spring
Sp.C.	52	2 Credits	Fall-Spring

Basic Speech Communication Skills (2+0)

Development of ease and fluency in oral discourse.

Sp.C.	111	3 Credits	Fall-Spring
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Fundamentals of Oral Communication (3+0)

An introduction to the processes of interpersonal and group communication patterns, focusing on the affective elements of language and culture.

Sp.C.	201	1 Credit	Fall-Spring
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Debate Practicum (0+2)

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.C. 351, Argumentation and Debate, may enroll in the latter with the consent of the instructor and may not receive more than eight units of credit for any combination of the two courses.

- Sp.C. 211 2 Credits Fall
Voice and Diction (1+2)
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.C. 111 or admission by arrangement.)
- Sp.C. 235 3 Credits Fall-Spring
Discussion (3+0)
Nature and operation of discussion groups; use of evidence, reasoning, reflective thinking, group psychology, participant, and leader behavior.
- Sp.C. 241 3 Credits Fall-Spring
Public Speaking I (3+0)
Theory and practice of exposition and persuasion and platform speaking situations.
- Sp.C. 242 2 Credits Fall-Spring
Public Speaking II (2+0)
Theory and practice of rhetoric and public address. Basic works from Plato to Quintillian. Practice in advanced forms of exposition and persuasion.
- Sp.C. 311 3 Credits Fall
Introductory Phonetics (3+0)
Use of International Phonetic Alphabet; broad transcription use in acting, teaching, speech improvement.
- Sp.C. 320 3 Credits Fall-Spring
General Semantics (3+0)
A study of human interaction through communication processes.
- Sp.C. 351 3 Credits Fall-Spring
Argumentation and Debate (3+0)
Theory of argumentation and debate applied to contemporary issues. Practice in briefing and presenting arguments, testing evidence, and detecting fallacies.
- Sp.C. 361 3 Credits Fall-Spring
Oral Interpretation (2+2)
Interpretative reading based on textual analysis of literary forms and careful study of principles of effective reading. (Prerequisite: Sp.C. 111 or admission by arrangement.)

- Sp.C. 371 3 Credits Fall-Spring
Speech for the Classroom Teacher (3+0)
Speech development in the child. Common classroom speech disorders; articulation, delayed speech, stuttering. Classroom procedures in speech improvement.
- Sp.C. 411 3 Credits Spring
Advanced Phonetics (3+0)
Use of International Phonetic Alphabet; narrow transcription and modifying signs; foreign language accents and dialects; speech distortions. (Prerequisite: Sp.C. 311.)
- Sp.C. 493 Credits Arr. Fall
Sp.C. 494 Credits Arr. Spring
Special Topics
Various subjects. (Admission by arrangement. Offered as demand warrants.)

SPEECH PATHOLOGY

- Sp.P. 210 3 Credits Spring
Speech Processes (3+0) (Alternate years)
Five basic speech processes. Respiration, phonation, resonance, articulation, and audition.
- Sp.P. 211 3 Credits Fall-Spring
Fundamentals of Speech Correction (3+0)
Basic speech processes. Comprehensive study of four speech disorders; cleft palate, stuttering, hearing impairment, mental retardation (speech and language aspects).
- Sp.P. 212 3 Credits Fall-Spring
Fundamentals of Speech Correction II (3+0)
Comprehensive study of four speech disorders: articulation, aphasia, cerebral palsy, autism (speech and language aspects).
- Sp.P. 341 3 Credits Spring
Clinical Methods in Speech Correction (2+2)
Administration of clinical tests of speech and application of principles of speech correction. (Prerequisites: Sp.C. 311, Sp.P. 211, or admission by arrangement.)

Sp.P. 493 Credits Arr. Fall
 Sp.P. 494 Credits Arr. Spring

Special Topics

Various subjects. (Admission by arrangement.
 Offered as demand warrants.)

THEATRE

Thr. 101,201 1-3 Credits Fall
 Thr. 301,401 Spring

Theater Practicum (0+var.)

Participation in Drama Workshop or lab production as performer or technical staff member.

Thr. 211 3 Credits Fall-Spring
 Introduction to the Theater (3+0)

History of theater with emphasis on dramatic form, architecture, and standards of criticism.

Thr. 221 3 Credits Fall-Spring
 Acting I (1+4)

Principles of acting developed through pantomime, improvisation, and sense-memory. (Prerequisite: Thr. 211 or admission by arrangement.)

Thr. 241 3 Credits Fall-Spring
 Basic Stagecraft (1+4)

Materials of scene construction and painting and their use.

Thr. 321 3 Credits Fall-Spring
 Acting II (1+4)

Building a character; role study and performance of small scenes. (Prerequisites: Thr. 211, 221, or admission by arrangement.)

Thr. 331 3 Credits Fall-Spring
 Theater Production (1+4)

Direction of short plays for drama lab productions. Principles of makeup, lighting, and production. (Prerequisites: Thr. 211, 221, or admission by arrangement.)

Thr. 341 3 Credits Fall-Spring
 Intermediate Stagecraft (1+2)

An examination of the less common scenic materials with methods and techniques for their use. Particular attention will be given to the use of dye in painting backgrounds and projection

slides, vacuum formed plastics, molded polyurethane foam, etc.

Thr. 343 3 Credits Fall-Spring
 Scene Design (3+0)

Principles and techniques of theatrical scene design. The student will design projects directed at solving particular scenic problems or working in a specific scenic style with specific physical limitations. (Prerequisite: Thr. 241 or permission of the instructor.)

Thr. 347 3 Credits Fall-Spring
 Lighting Design (3+0)

Principles and techniques of theatrical lighting design. The student will conduct practical experiments and design projects applying the experience gained from the experiments. (Prerequisites: Thr. 241, 343, or permission of the instructor. May be taken concurrently with Thr. 343, as the material from one course may be applied to the other.)

Thr. 351 2 Credits Fall-Spring
 Makeup for Theater (1+2)

Theatrical makeup for actors, teachers, directors, 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.)

Thr. 355 3 Credits Fall-Spring
 History of Stage Costume (3+0)

Stage costume and contemporary dress of the major theatrical periods. Emphasis will be placed on the process of selection of costumes for representative plays of each period.

Thr. 435 3 Credits Spring
 Directing (3+0)

Directorial analysis of a major dramatic work for public presentation. (Prerequisite: senior majors with 3.00 G.P.A. in speech.)

Thr. 493 Credits Arr. Fall
 Thr. 494 Credits Arr. Spring

Special Topics

Various subjects. (Admission by arrangement.
 Offered as demand warrants.)

WILDLIFE MANAGEMENT

W.M. 301 3 Credits Fall
**Principles of Animal Population
 Dynamics and Management (2+2)**

Principles of animal population dynamics, especially in the single-species situation; principles of managing animal populations, including goals, approaches, ecological and socio-economic frameworks and major problems. Extension and application of basic ecologic principles to the manipulation of animal habitat and populations. (Prerequisites: Biol. 303 and L.R. 101 or permission of the instructor.)

W.M. 333 1 Credit Fall
**Literature of Ecology and
 Resource Management (0+3)**

Standard and modern approaches to utilization of biological literature; introduction to information retrieval problems and techniques. Thorough acquaintance developed with periodical and other literature in student's special interest field. (Admission by permission of the instructor.)

W.M. 402 2 Credits Spring
Wildlife Biology and Management (1+3)

Intensive study of terrestrial animal population dynamics and management, especially at community and ecosystem levels. Methods of collecting, analyzing, and interpreting field and laboratory data. (Prerequisites: W.M. 301; Biol. 310; and Applied Stat. 301.)

W.M. 411 Credits Arr. Fall
Fisheries Field Trip

A trip to acquaint students with some of the principal fisheries of the state and problems involved in their management. (Prerequisite: major in fisheries biology or admission by arrangement. Offered as demand warrants.)

W.M. 417 2 Credits Fall-Spring
**Wildlife Management — Forest
 and Tundra (2+0)**

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 2 Credits Fall-Spring
**Wildlife Management —
 Wetlands (2+0)**

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 3 Credits Fall
Limnology (2+3)

Physical, chemical, and biological characteristics of fresh waters, emphasizing ecological aspects important to fish and other organisms. (Prerequisites: Chem. 106, Biol. 105, 303, or permission of the instructor.)

W.M. 429 3 Credits Fall
General Fisheries Biology (2+3)

The general biology of fishes in relation to their management. Methods of collecting, analyzing and interpreting field and laboratory data. (Prerequisites: Biol. 303, 309, Applied Stat. 301.)

W.M. 430 3 Credits Spring
Fisheries and Their Management (3+0)

Major commercial and recreational fisheries of the world, with emphasis on the North Pacific. Biological, economic, and political considerations in the use and management of aquatic resources. (Prerequisites: Biol. 303, 309, and Applied Stat. 301 desirable, but non-majors encouraged, and permission of the instructor.)

W.M. 491 1 Credit Fall
 W.M. 492 1 Credit Spring
Seminar (2+0)

Various topics in wildlife management. (Prerequisite: senior standing in wildlife or admission by arrangement. Offered as demand warrants.)

W.M. 493 Credits Arr. Fall
 W.M. 494 Credits Arr. Spring
Special Topics

Various subjects studied principally through directed reading and discussions. (Admission by arrangement.)

COURSE DESCRIPTIONS 283

W.M.	611	Credits Arr.	Fall
W.M.	612	Credits Arr.	Spring
Wildlife Field Trip			

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	3 Credits	Fall
Vertebrate Population Dynamics (2+3)			

General theories of population control, emphasizing vertebrates. Laboratory work on the description and interpretation of the characteristics and dynamics of wild populations. (Prerequisite: Admission by arrangement; Minimal preparation equivalent to Biol. 303, Math. 200, and Applied Stat. 301. Offered as demand warrants, usually in alternate years.)

W.M.	622	3 Credits	Spring
Environmental Analysis (2+3)			

Recognition, description and evaluation of factors in terrestrial environments. (Admission by arrangement. Offered as demand warrants.)

W.M.	624	2 Credits	Spring
Problems in Fisheries Management			

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.	625	3 Credits	Fall
Fishery Ecology (2+3)			

Advanced ecology of aquatic systems, with emphasis on production, bioenergetics, environmental relationships, pollution, fish behavior, and population dynamics. Applications to fish and invertebrate fisheries production and management. (Prerequisites: Geol. 411 or W.M. 423, and W.M. 429. Offered in alternate years; next offered 1972.)

W.M.	691	1 Credit	Fall
W.M.	692	1 Credit	Spring
Seminar (2+0)			

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	Credits Arr.	Fall
W.M.	694	Credits Arr.	Spring
Special Topics			

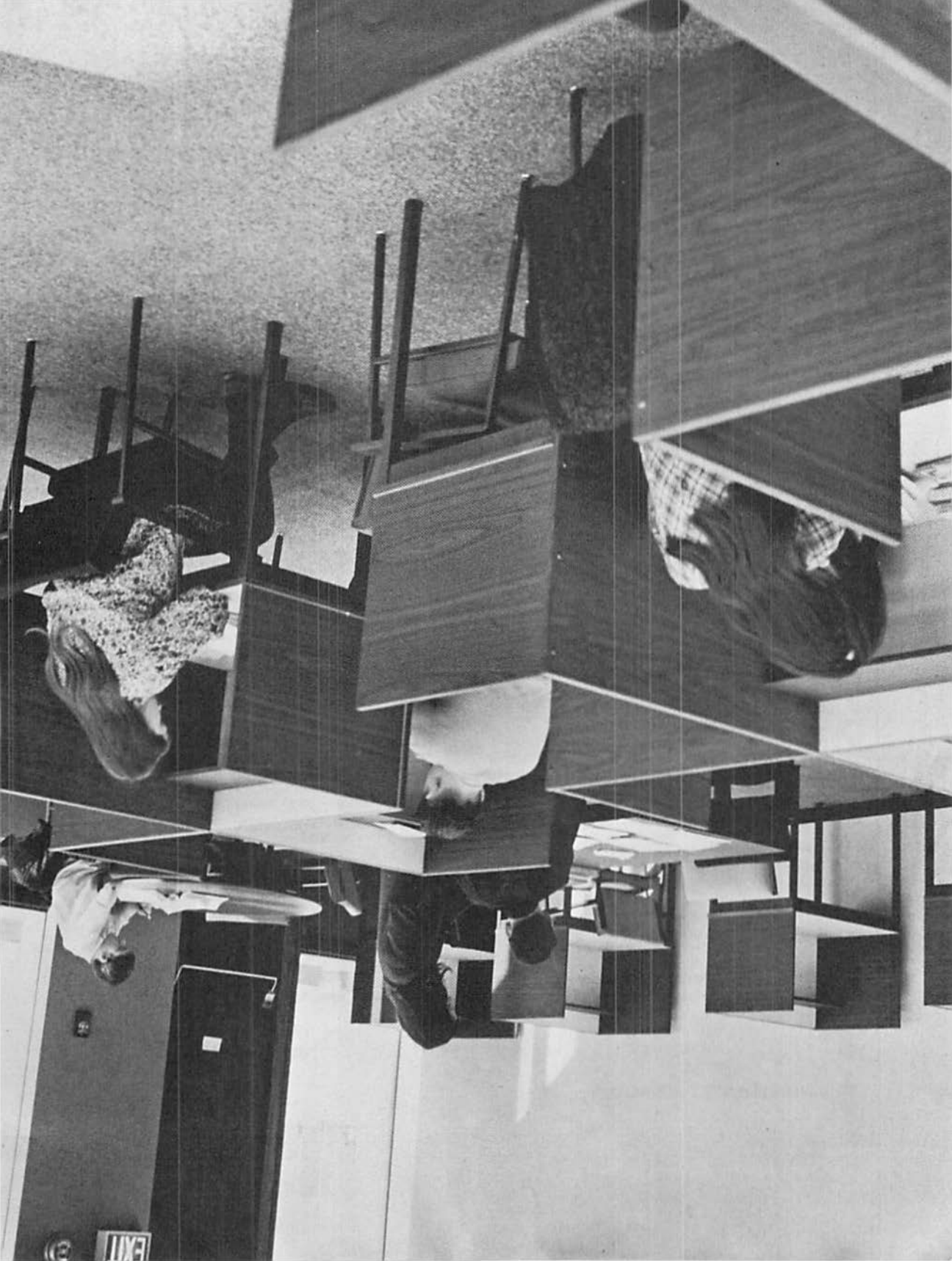
Various subjects studied principally through directed reading and discussions. (Admission by arrangement.)

W.M.	695	Credits Arr.	Fall
W.M.	696	Credits Arr.	Spring
Research			

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	Credits Arr.	Fall
W.M.	698	Credits Arr.	Spring
Thesis			

(Admission by arrangement.)



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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EDITH R. BULLOCK, Anchorage, 1967-1975

JAMES NOLAN, Wrangell, 1967-1973

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JEROLD G. SORENSEN, M.A., Director, University Relations

HAROLD A. BYRD, B.B.A., Executive Director, Budget Development and Legal Affairs

DONALD C. MOYER, Ph.D., Executive Director of Planning and Institutional Studies

HONORARY STAFF AND EMERITI

TERRIS MOORE, (Hon.), Professor of the University. Williams College '29, A.B.; Harvard '33, M.B.A.; '37, D.C.S.; University of Alaska '67, LL.D.; (President 1949-1953, Prof. 1953-)

ERNEST N. PATTY, President, Emeritus. University of Washington '19, B.S.; '25, E.M.; University of Alaska '53, D. Engr. (Dean, 1925-35, President 1953-1960)

VENA A. CLARK, Associate Professor Home Economics, Emeritus. Cotner College '25, A.B.; Iowa State University '33, M.S. (1953-1967)

LYDIA FOHN-HANSEN, Associate Director of Cooperative Extension, Emeritus. Iowa State College '19, B.S.; '22, M.S.; University of Alaska '59, D. Hum. (1925-1936, 1940-1959)

- WILLIAM K. KELLER, Professor of Education, Emeritus. State 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. Pomona College '28, B.A.; Claremont College '30, M.A.; Teachers College '38, Ed.D. (1943-1945, 1956-1963)
- LOLA CREMEANS TILLY, Professor of Home Economics, Emeritus. University of Illinois '20, A.B.; '21, M.S.; University of Alaska '63, D. Hum. (1929-1937, 1942-1963)
- VICTOR P. HESSLER, Professor of Geophysics, Emeritus. Oregon State University '26, B.S.; Iowa State University '27, M.S.; '34, Ph.D. (1955-1968, 1968-)
- CHARLES SARGENT, Dean, College of Mathematics, Physical Sciences and Engineering, Emeritus. University of Idaho '48, B.S.C.E.; Stanford University '58, M.S. (Professor 1953-61, Dean, 1961-67)
- AGNES S. SUNNELL, Associate Professor of Extension, Emeritus. University of Washington '31, B.S.; Washington State University '44, M.S. (1960-1970)

ACADEMIC FACULTY AND PROFESSIONAL STAFF 1971

The date following each name designates the time of original appointment to the University faculty or staff. (Dates of resignations and re-appointments are not indicated.)

A second date in parentheses follows each member's present rank and indicates the beginning of service in that rank.

- ABERCROMBIE, ELIZABETH — 1969 — Practical Nursing Instructor (1969), Anchorage Community College.
- AKASOFU, SYUN-ICHI — 1958 — Professor of Geophysics (1964), Geophysical Institute, University of Tohoku '53, B.S.; '57, M.S.; University of Alaska '61, Ph.D.
- ALEXANDER, VERA — 1962 — Associate Professor of Marine Science (1969), Institute of Marine Science. University of Wisconsin '55, B.A.; '62, M.S.; University of Alaska '65, Ph.D.
- ALLEN, GEORGE R. — 1964 — Instructor of English (1964). University of Alaska '64, B.A.; '64, M.A.
- ALLEN, LEE D. — 1956 — Assistant Agricultural Engineer (1967), Institute of Agricultural Sciences (Palmer Research Center). University of Idaho '57, B.S.
- ALLEN, MARY BELLE — 1966 — Professor of Marine Science (1966), Institute of Marine Science. University of California '41, B.S.; Columbia University '46, Ph.D.
- ALLEN, W. RAYMOND — 1970 — Assistant Professor of English (1970). Idaho State University '58, B.A.; Arizona State University '68, M.A.; Kansas State University '70, M.A.
- ALLISON, RICHARD C. — 1968 — Associate Professor of Geology (1968). University of Washington '57, B.S.; '59, M.S.; University of California '67, Ph.D.
- ANDERSON, JAMES H. — 1970 — Assistant Professor of Plant Physiology (1970), Institute of Arctic Biology. University of Washington '63, B.S.; Michigan State University '70, Ph.D.
- ANDRESEN, PATRICIA — 1967 — Assistant Professor of Mathematics (1967). University of Illinois '55, B.S.; University of Missouri '58, M.A.
- APPEL, DARLENE M. — 1963 — Instructor of Office Administration (1963), Anchorage Community College. Mankato State College '56, B.S.

- ARVEY, MARTHA M. — 1969 — Instructor of Library Science (1969). Scripps College '63, B.A.; University of California at Los Angeles '64, M.L.S.
- ATAMIAN, SARKIS — 1962 — Head, Department of Psychology and Sociology, and Associate Professor of Sociology (1967). University of Rhode Island '50, B.S.; Brown University '54, M.A.
- ATCHISON, JAMES — 1970 — Assistant Professor of English (1970). Sitka Community College. Western Kentucky University '57, A.B.; California State College '67, M.A.
- AYOTTE, ELLEN P. — 1964 — Agent, Home Economics and Assistant Professor of Extension (Fairbanks) (1969); Stout State College '58, B.S.; University of Alaska '69, M.A.
- BABB, JAMES D. — 1968 — Editor, Institute of Social, Economic and Government Research (1968). George Washington University '64, A.B.
- BABCOCK, WILLIAM HAVENS — 1969 — Instructor of Sociology (1969), Anchorage Community College. Springfield College '60, B.S.; Columbia University '63, M.S.W.
- BAILEY, EUNICE — 1961 — Assistant Professor of Office Administration (1967), Ketchikan Community College. Oregon State College '25, B.S.
- BAKER, BRUCE R. — 1970 — Assistant Herdsman, Musk Ox Project (1970). Carleton College '64, B.A.; Cornell University '69, M.A.
- BANG, MYRTLE B. — 1961 — Agent, Home Economics and Assistant Professor of Extension (Palmer), (1961).
- BANKS, WILLIAM J. — 1968 — Technician, Instructor Electronics Technology (1968) Anchorage Community College.
- BARGER, JAMES WILLARD — 1969 — Head, Department of Accounting, and Professor of Accounting (1969). University of North Carolina '56, B.S.; Tennessee '59, C.P.A.; University of Alabama '60, M.B.A.; '63, Ph.D.
- BARNHARDT, RAYMOND J. — 1970 — Assistant Professor of Education and Coordinator of Teacher Corps Project (1970). North Dakota State University '65, B.S.; John Hopkins University '67, M.Ed.; University of Oregon '70, Ph.D.
- BARSDATE, ROBERT J. — 1962 — Associate Professor of Marine Science (1967), Institute of Marine Science. Allegheny College '59, B.S.; University of Pittsburgh '63, Ph.D.
- BASYE, EDMUND — 1967 — Internal Auditor (1969). University of Washington '49, B.A.; '52, C.P.A. Certificate.
- BATES, HOWARD F. — 1957 — Professor of Geophysics (1970), Geophysical Institute. Oregon State College '50, B.S.; '56, M.S.; University of Alaska '61, Ph.D.
- BECK, MARY L. — 1963 — Assistant Professor of English (1969), Ketchikan Community College. Dominican College of San Rafael '45, B.A.; Stanford University '47, M.A.
- BEDFORD, JIMMY — 1965 — Professor of Journalism (1968). University of Missouri '50, A.B.; '51, B.J.; '52, M.A.
- BEDSWORTH, WILLIAM E. — 1966 — Assistant Professor of Business Administration (1967), University of Alaska, Anchorage. University of California '58, B.A.; Washington State University '60, M.A.
- BEERS, CLARENCE G. — 1961 — University Buyer (1963).
- BEHLKE, CHARLES E. — 1950 — Dean, College of Mathematics, Physical Sciences and Engineering; Professor of Civil Engineering (1966). Washington State University '48, B.S.; '50, M.S.; Stanford University '57, Ph.D.

- BEHRISCH, HANS WERNER — 1969 — Assistant Professor (1969), Institute of Arctic Biology. University of British Columbia '64, B.S.; Oregon State University '66, M.A.; '69, Ph.D.
- BEIRNE, O. THOMAS — 1970 — Assistant Professor of English and News Coordinator (1970), Southcentral Regional Center. King's College '51, B.A.; Colgate University '61, M.A.
- BEISTLINE, EARL H. — 1946 — Executive Officer; Provost, University of Alaska, and Professor of Mining Engineering (1970). University of Alaska '39, B. Min. Engr.; '47, E.M.; '69, LL.D.(Hon.)
- BELON, ALBERT E. — 1956 — Associate Professor of Physics (1962), Geophysical Institute. University of Alaska '52, B.S.; University of California '54, M.A.
- BEMIS, JAMES — 1970 — Extension Editor and Associate Professor of Extension (1970). Texas A-M '56, B.A.; University of Wisconsin '68, Ph.D.
- BENESCH, WALTER J. — 1963 — Associate Professor of Philosophy (1968). University of Denver '55, B.A.; University of Montana '56, M.A.; Leopold Franzens Universität Innsbruck '63, Ph.D.
- BENJAMIN, ELIZABETH F. — 1968 — Staff Counselor and Assistant Professor of Education (1968). University of the Pacific '48, B.S.; San Jose State College '63, M.A.
- BENNETT, F. LAWRENCE — 1968 — Head, Department of Engineering Management, and Associate Professor of Engineering Management (1968). Rensselaer Polytechnic Institute '61, B.C.E.; Cornell University '63, M.S.; '66, Ph.D.
- BENSON, CARL S. — 1960 — Chairman, Department of Geology, and Professor of Geology and Geophysics (1969). University of Minnesota '50, B.A.; '56, M.S.; California Institute of Technology '60, Ph.D.
- BERG, EDUARD — 1963 — Professor of Geophysics (1967), Geophysical Institute. University of Saarbrücken '53, Diplom Physiker; '55, Ph.D.
- BERGLUND, ERWIN R. — 1970 — Assistant Professor of Land Resources (1970). University of Minnesota '65, B.S.; University of Arizona, '67, M.S.; University of Minnesota, '70, Ph.D.
- BERNET, JOHN W. — 1959 — Associate Professor of English (1970). State University of Iowa '51, B.A.; University of North Dakota '57, M.A.; Stanford University '69, M.A.; '69, Ph.D.
- BERGSTROM, ROBERT — 1966 — Instructor of Electronic Technology (1969).
- BERKEY, FRANK T. — 1962 — Senior Research Assistant (1963), Geophysical Institute. Linfield College '62, B.A.; University of Alaska '64, M.S.
- BILLAUD, JEAN-PAUL — 1965 — Professor of Music (1970). Ecole Normale de Musique de Paris '55, Diplôme Supérieur de Virtuosité; '56, License de Concert.
- BINGHAM, DOUGLAS K. — 1967 — Senior Research Assistant (1967), Geophysical Institute. Yale University '62, B.A.; University of Alaska '67, M.S.
- BLAIR, SALLY DAVIS — 1970 — Instructor of Physical Education (1970). Bryn Mawr College '60, A.B.; University of Alaska '70, M.A.T.
- BLEWETT, PETER — 1968 — Assistant Professor of History, (1968), Anchorage Community College. Willamette University '61, B.A.; Johns Hopkins University '64, M.A.
- BONNEY, WILLIAM W. — 1969 — Assistant Professor of English (1969). University of Pennsylvania '64, B.A.; '65, M.A.; '69, Ph.D.
- BOWLING, SUE A. — 1967 — Assistant Professor of Geophysics (1967), Geophysical Institute. Radcliffe College '63, A.B.; University of Alaska '67, M.S.; '70, Ph.D.

- BOYD, JOHN S. — 1969 — Senior Research Assistant (1969), Geophysical Institute. University of Sydney, B.Sc.; University of Alaska '69, M.S.
- BRANTON, C. IVAN — 1968 — Agricultural Engineer (1968), Institute of Agricultural Sciences (Palmer Research Center). Oregon State University '53, B.A.
- BREWER, MAX C. — 1956 — Director and Ice Physicist (1956), Arctic Research Laboratory. Washington University '50, B.S.; University of Alaska '65, D.Sc. (Hon.)
- BRINK, MARGARET — 1970 — Assistant Professor of Music (1970). Northwestern University '66, B.M.; '67, M.M.
- BRINK, PHILIP E. — 1970 — Assistant Professor of Music (1970). Northwestern University '66, B.M.; '67, M.M.
- BROCKEL, CLAYTON E. — 1964 — Resident Director (1964), Kenai Peninsula Community College. Montana State University '55, B.A.; Colorado State College '60, M.A.Ed.Ad.
- BROWN, E. STAPLES — 1967 — Assistant Engineer (1969), Arctic Environmental Engineering Laboratory. University of Maine '63, B.S.M.E.; University of Alaska '67, M.S.E.M.
- BROWN, GREETA K. — 1965 — Associate Professor of Music (1968). Fort Wright College '49, B.M.; University of Idaho '53, M.M.
- BROWN, J. FRANK — 1967 — Coordinator of Central Personnel Services (1968). Brigham Young University '60, B.S.; '65, M.B.A.
- BROWN, NEAL — 1966 — Assistant Geophysicist (1969), Geophysical Institute. Washington State University '61, B.S.; University of Alaska '66, M.S.
- BROWN, ROBERT W. — 1967 — Head, Department of Mathematics, and Professor of Mathematics (1967). Pacific University '50, B.S.; Oregon State University '52, M.S.; '58, Ph.D.
- BRUMMETT, RICHARD D. — 1970 — Assistant Professor of Psychology (1970). Texas College of Arts & Industries '64, B.A.; Texas Technical College '66, M.A.
- BRUNDAGE, ARTHUR L. — 1968 — Professor of Animal Science (1968), Institute of Agricultural Sciences (Palmer Research Center). Cornell University '50, B.S.; University of Minnesota '52, M.S.; '55, Ph.D.
- BRYANT, JOHN D. — 1969 — Senior Research Assistant (1969), Institute of Arctic Biology. Colorado State University '66, B.S.; University of Calgary '67, M.S.
- BULLOCK, GEORGE D. — 1970 — Assistant Professor of History (1970). Portland State University '64, B.A.; Stanford University '68, M.A.
- BULLOCK, MARY — 1970 — Assistant Professor of History (1970). Agnes Scott College '66, B.A.; Stanford University '68, M.A.
- BURAND, JEAN R. — 1962 — Coordinator, Nutrition Program and Assistant Professor of Extension (1969). University of Alaska '57, B.A.; '67, M.A.
- BURAND, WILLOW M. — 1968 — Assistant Professor of Mining Extension (1970), Statewide Services. New Mexico Institute of Mining Technology '53, B.S.
- BURDICK, JOHN L. — 1960 — Head, Department of Civil Engineering, and Professor of Civil Engineering (1969). Rensselaer Polytechnic Institute '47, B.S.C.E.; Massachusetts Institute of Technology '48, S.M.
- BURRELL, DAVID COLIN — 1965 — Associate Professor of Marine Science (1969), Institute of Marine Science. Nottingham University '61, B.Sc.; '64, Ph.D.
- BURTON, WAYNE E. — 1963 — Associate Professor of Economics (1969), Institute of Agricultural Sciences (Palmer Research Center). University of Wyoming '58, B.S.; Texas A & M University '60, M.S.; Montana State University '68, Ph.D.

- BUSWELL, ARTHUR S. — 1951 — Vice President for Public Service; Director, Cooperative Extension Service, and Professor of Agriculture (1968). University of Maine '49, B.S.; '50, M.S.; University of Wisconsin '59, Ph.D.
- BUTTON, DON K. — 1964 — Associate Professor of Marine Science (1968), Institute of Marine Science. Wisconsin State College '55, B.S.; University of Wisconsin '61, M.S.; '64, Ph.D.
- BYRD, HAROLD A. — 1936 — Executive Director, Budget Development and Legal Affairs (1968). University of Washington '31, B.B.A.
- CAMERON, BRUCE M. — 1968 — Director of Accounting Services (1969). Arizona State University '53, B.S.; Brigham Young University '64, M. of Accountancy.
- CARLSON, AXEL R. — 1965 — Farm and Home Structures Specialist, and Associate Professor of Extension (1967). Michigan State University '53, B.S.; Pennsylvania State University '66, M.S.
- CARLSON, ROBERT — 1965 — Associate Professor of Hydrology (1969), Institute of Water Resources. University of Wisconsin '61, B.S.; '63, M.S.; '67, Ph.D.
- CARTER, RONALD M. — 1970 — Associate Professor of Education (1970). Indiana University '56, A.B.; '62, M.S.; '69, Ed.D.
- CASHEN, WILLIAM R. — 1942 — Professor of Mathematics (1951). University of Alaska '37, B.S.; University of Washington '48, M.A.
- CASPER, LAWRENCE — 1970 — Chemist (1970), Institute of Water Resources. Juniata College '69, B.S.
- CAVASOS, LLOYD E. — 1962 — Instructor (1962), Institute of Agricultural Sciences (College Research Center). New Mexico State University '51, B.S.
- CHAMORRO BUERBA, ANGEL — 1969 — Assistant Professor of Spanish (1969). Salamanca University '55, B.A.; Paris University '58, M.A.; Diploma of High International Studies '60; University of Helsinki Diploma of Comparative Sciences '61.
- CHANDRAN, DIVAKAR J.F. — 1970 — Assistant Professor of Economics (1970). University of Massachusetts '68, M.S.
- CHAUVIN, DAVID L. — 1961 — Assistant for Technical Services (1970). University of Washington '50, B.S.E.E.
- CHINN, RONALD ERNEST — 1966 — Head, Department of Political Science, and Associate Professor of Political Science (1966). Stanford University '33, A.B.; '37, M.A.; University of California at Berkeley '58, Ph.D.
- CHOY, TERENCE TIN-HO — 1970 — Associate Professor of Art (1970). San Francisco State College '65, B.A.; University of California at Berkeley '67, M.A.
- CLARK, BETTIE S. — 1962 — Head, Alumni Services and Graduate Placement (1962). University of Alaska '35, B.S.
- CLARKE, EDWIN S. — 1970 — Assistant Engineer (1970), Institute of Arctic Environmental Engineering. University of Alaska '69, B.S.
- COCHRAN, JOHN R. — 1970 — Professor of Speech Pathology (1970). Utah State University '49, B.S.; '50, M.S.; University of Utah '59, Ph.D.
- COONEY, R. THEODORE — 1970 — Assistant Professor of Fisheries and Marine Science (1970). University of Washington, '64, B.S.; '67, M.S.; '70, Ph.D.
- COMBS, ALEX DUFF — 1962 — Associate Professor of Art (1969), Anchorage Community College. Temple University '49, B.F.A.; '49, B.S.Ed.; '52, M.F.A.

- CONNET, MARGARET B. — 1967 — Head Start Regional Training Officer (1967). University of Kansas '25, A.B.; University of Chicago '47, M.A.
- COOK, DONALD J. — 1953 — Head, Department of Mineral Engineering, and Professor of Mineral Beneficiation (1965). University of Alaska '47, B.S.; '52, E.M.; Pennsylvania State University '58, M.S.; '60, Ph.D.
- COOK, JOHN P. — 1968 — Assistant Professor of Human Ecology and Anthropology (1969). Dartmouth College '59, B.A.; Brown University '64, M.A.; University of Wisconsin '68, Ph.D.
- CRAWFORD, NANCY M. — 1970 — Assistant Professor of English (1970). Macatester College '62, B.S.; University of Hawaii '68, M.A.
- CRISP, ANN — 1970 — Youth Nutrition Specialist and Instructor of Extension (1970). Ball State University '69, B.S.
- CREVENSTEN, DANIEL C. — 1963 — Executive Officer (1963), Geophysical Institute.
- CURRIER, RUSSELL L. — 1970 — Assistant Professor of English (1970). University of Rochester '55, B.A.; University of Hawaii '69, M.A.
- DAMRON, FRANKLIN D. — 1969 — Instructor of Psychology (1969), Juneau-Douglas Community College. Foothill College '66, A.A.; San Jose State College '66, B.A.; '68, M.A.
- DARNELL, FRANK — 1966 — Head, Department of Education, and Associate Professor of Education (1968). Colorado State University '51, B.S.; University of Alaska '62, M.Ed.; Wayne State University '70, Ed.D.
- DAVIES, JOHN — 1970 — Senior Research Assistant (1970), Geophysical Institute. Reed College '67, B.A.; University of Alaska '70, M.S.
- DAVIES, LAWRENCE E. — 1970 — Manager, News Service and Distinguished Lecturer in Journalism (1970). Willamette University '21, B.A.; '51, Lit.D. (Hon.)
- DAVIS, CHARLES W. — 1963 — Professor of Music (1969). State University of Iowa '37, B.A.; '48, M.A.
- DAVIS, T. NEIL — 1965 — Deputy Director and Professor of Geophysics (1970), Geophysical Institute. University of Alaska '55, B.S.; '61, M.S.; California Institute of Technology '57, Ph.D.
- DEAN, FREDERICK C. — 1954 — Head, Department of Wildlife Management, Professor of Wildlife Management, and Assistant Leader of Cooperative Wildlife Research Unit (1966). University of Maine '50, B.S.; '52, M.S.; State University of New York '57, Ph.D.
- DEAN, SHARON — 1967 — Programmer (1970), Geophysical Institute. University of Alaska '67, B.S.
- DECKER, DORIS S. — 1967 — Instructor of Office Administration (1967), Anchorage Community College. Husson College '59, B.S.
- DEEHR, CHARLES S. — 1958 — Associate Professor of Geophysics (1968), Geophysical Institute. Reed College '58, B.S.; University of Alaska '61, M.S.; '68, Ph.D.
- DEGEN, VLADIMIR — 1969 — Assistant Professor of Physics (1969), Geophysical Institute. University of Toronto '58, B.A.; '60, M.A.; University of Western Ontario '66, Ph.D.
- DIETER, EMMA R. — 1962 — Senior Research Assistant (1962), Institute of Marine Science. DePaul University '59, B.S.
- DIETERICH, ROBERT A. — 1967 — Veterinarian (1967), Institute of Arctic Biology. University of California '61, B.S.; '63, Ph.D.

- DINKEL, DONALD H. — 1968 — Associate Professor of Plant Physiology (1968), Institute of Agricultural Sciences (College Research Center). University of Minnesota '54, B.S.; '60, Ph.D.
- DISTAD, JOHN O. — 1955 — Associate Professor of Mathematics (1968). Montana State University '53, B.S.; '55, M.S.
- DOUGLAS, ELVERA K. VOTH — 1962 — Assistant Professor of Music (1962), Anchorage Community College. Bethel College '46, B.A.; Northwestern University '48, M. Mus. Ed.
- DOWLING, RICHARD — 1970 — ETV Chief Engineer (1970), Division of Media Services.
- DOWNING, JACK E. — 1970 — Instructor of Electronics Technology (1970).
- DOYLE, JOHN P. — 1963 — Assistant Professor of Fisheries Extension (1969), Statewide Services. University of Washington '59, B.S.
- DOYLE, MARIE C. — 1965 — Associate Professor of Psychology (1968), University of Alaska, Anchorage. University of Utah '50, B.A.; '61, Ph.D.
- DRAHN, THEODORE L. — 1968 — Assistant Professor of Sociology (1968). University of Oregon '56, B.S.; Portland State College '65, M.S.W.
- DRAZAN, JOSEPH G. — 1970 — Instructor of Library Science (1970). Eastern Washington State College '69, B.A. University of Hawaii '70, M.L.S.
- DRURY, HORACE F. — 1967 — Director (1967), Institute of Agricultural Sciences. George Washington University '37, B.S.; Harvard University '38, A.M.; '40, Ph.D.
- DUNCAN, IRIS J. A. — 1965 — Associate Professor of English (1969). Southwestern State College '55, B.A.; University of Oklahoma '62, M.A.; '65, Ph.D.
- DUNCAN, JOHN THOMAS — 1970 — Program Director and Instructor in Broadcasting (1970). Casper College '60, A.A.; University of New Mexico '64, B.A.; '68, M.A.
- DUNCAN, KATE C. — 1970 — Department of Art, Lecturer (1970). Univ. of New Mexico '64, B.A.; '67, M.A.
- DUNLAP, SHERRY LYNN — 1964 — Assistant Professor of Library Science (1970). Bowling Green University '58, B.A.; University of Illinois '59, M.S.L.S.
- ECHOLS, F. ARNOL — 1963 — Executive Officer (1963), Office of the Vice President for Research and Advanced Study. Linfield College '57, B.S.; University of Alaska '68, M.B.A.
- EGAN, ROBERT H. — 1965 — Special Orientation Advisor (1969), Office of Student Affairs. Montana State University '60, B.A.; Long Beach State College '65, M.A.
- ELAM, LEROY H. — 1970 — Assistant Professor of Psychology (1970). Bradley University '61, B.S.; '62, M.A.; Washington University '70, Ph.D.
- ENGLISH, BURT H. — 1969 — Associate Professor of Political Science (1969). Ohio University '62, B.A.; University of Florida '64, M.A.; '67, Ph.D.
- ENSIGN, ELAINE — 1969 — Lecturer in Mathematics (1969). Indiana University '53, B.A.; University of Wisconsin '55, M.S.
- ENSIGN, WALTER GATES, JR. — 1969 — Acting Head, Department of Speech, Drama and Radio, and Assistant Professor of Speech and Theatre (1969). University of Denver '66, B.A.; '67, M.A.
- ENSOR, BARBARA — 1969 — Instructor of English (1969), Anchorage Community College. Gettysburg College '59, B.A.; University of Colorado '67, M.A.

- EPPS, ALLEN C. — 1969 — Extension Horticulturist, and Assistant Professor of Extension (College) (1969). Montana State University '66, B.S.; '69, M.S.
- ERKIN, ANNETTE E. — 1970 — Instructor of Anthropology (1970). Syracuse University '66, B.A.; University of Oklahoma '70, M.A.
- ESMAIL, OMAR J. — 1969 — Assistant Professor of Petroleum Engineering (1969). Louisiana State University '64, B.S.; '66, M.S.; University of Texas '69, Ph.D.
- EVANS, RONALD, L. — 1970 — Executive Officer (1970), Institute of Social Economic and Government Research, San Francisco State College '63, B.A.
- EVERETTE, OLIVER P. — 1965 — Assistant Professor of English (1966). Concordia College '33, B.A.; University of Washington '51, M.A.
- FAHL, CHARLES B. — 1969 — Senior Research Assistant (1969), Geophysical Institute. Antioch College '63, B.S.; University of Alaska '69, M.S.
- FEDER, HOWARD M. — 1970 — Associate Professor of Zoology and Marine Science (1970). University of California at Los Angeles '48, A.B.; '51, M.A.; Stanford University '56, Ph.D.
- FERGUSON, CHARLES O. — 1969 — Dean, Statewide Services and Associate Professor of Education (1969). Northern Arizona University '56, B.S.; '60, M.A.; Wayne State University '69, Ed.D.
- FINEBERG, RICHARD A. — 1969 — Assistant Professor of Political Science (1969). Beloit College '64, B.A.; Claremont Graduate School '66, M.A.; '70, Ph.D.
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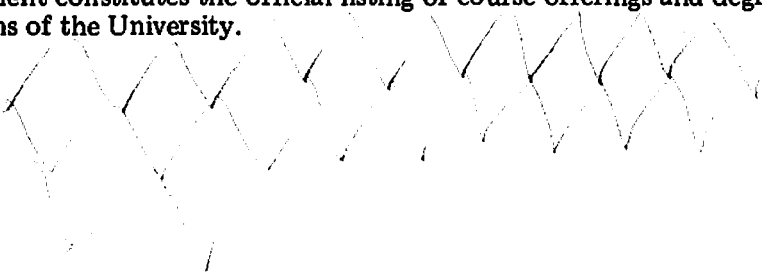
1971-72

Catalog Supplement

Recently, a number of important changes have been made in degree requirements and course offerings to adapt to the needs of University of Alaska students. This supplement contains new degree programs and courses and other changes that have been made since the 1971-72 catalog was published.

Each entry in the supplement is cross-referenced to a page in the general catalog. Please mark each change in your catalog.

The 1971-72 University of Alaska Catalog as updated by this supplement constitutes the official listing of course offerings and degree programs of the University.



Replaces present University Calendar

**1971-72
University Calendar**

1971 Summer Session

Short Session	June 7-25
Regular Session	June 28-Aug. 6
Post-Session	Aug. 9-13
Special Nine Week Session	June 7-Aug. 6

1971 Fall Semester

Residence Halls Open	Wed., Sept. 1
General Faculty Convocation	9:30 a.m., Wed., Sept. 1
Faculty Meetings (Academic Colleges)	11:00 a.m., Wed., Sept. 1
Faculty Meetings (Departmental)	1:30 p.m., Wed., Sept. 1
Orientation and Guidance Testing for New Students	Thurs., & Fri., Sept. 2 & 3
Orientation and Counseling of Students by Advisors	Fri & Sat., Sept. 3 & 4
Labor Day	Mon., Sept. 6
Registration	Tues., Sept. 7
Instruction Begins	Wed., Sept. 8
Late Registration Closes	Wed., Sept. 22
Last Day to Make Up Incompletes	Wed., Oct. 20
Six Weeks Grade Reports	Wed., Oct. 20
Last Day for Student Initiated Withdrawals	Tues., Nov. 23
Thanksgiving Holiday	Thurs., Nov. 25
End of Instruction/Examinations	Wed., Dec. 22
Final Grades on File with Registrar	Noon, Thurs., Dec. 23
End of Fall Semester	Thurs., Dec. 23

1972 Spring Semester

Residence Halls Open	Thurs., Jan. 13
Orientation and Guidance Testing for New Students	Fri., Jan. 14
Orientation and Counseling of Students by Advisors	Sat., Jan. 15
Registration	Mon., Jan. 17
Instruction Begins	Tues., Jan. 18
Late Registration Closes	Tues., Feb. 1
Last Day to Make Up Incompletes	Tues., Feb. 29
Six Weeks Grade Reports	Tues., Feb. 29
Spring Recess	5 p.m., Wed., Mar. 29—8 a.m., Mon., April 3
Last Day for Student Initiated Withdrawals	Thurs., April 13
All Campus Day (no classes)	Fri., Apr. 21
Last Day to Submit Grad. Final Exam form to Registrar	Fri., May 5
Governor's Day (classes held)	Sat., May 6
End of Instruction/Examinations	Wed., May 10
Final Copies of Theses due to V.P. for Research	Wed., May 10
Final Senior Grades on File with Registrar	9 a.m., Thurs., May 11
Final Grades on File with Registrar	5 p.m., Thurs., May 11
End of Spring Semester	Thurs., May 13
Commencement	Sun., May 14

1972 Summer Session

Short Session	June 5-23
Regular Session	June 26-Aug. 4
Post-Session	Aug. 7-11
Special Nine-Week Session	June 5-Aug. 11

The tuition and fees listed below apply to all institutions in the University of Alaska system. In addition, each institution may also have other fees and expenses that the student will be required to pay.

TUITION

	RESIDENT	NON-RESIDENT
Undergraduate Full-Time Students		
Non-Resident Tuition		\$ 300.00
University Registration Fee (12 or more credit hours)	\$ 100.00	100.00
Graduate Full-Time Students (Enrolled in 600 Level Courses)		
Non-Resident Tuition		\$ 300.00
University Registration Fee (12 or more credit hours)	\$ 150.00	150.00
Undergraduate Part-Time Students		
11 Credit Hours	\$ 110.00	\$ 360.00
10 Credit Hours	110.00	310.00
9 Credit Hours	110.00	260.00
8 Credit Hours	110.00	210.00
7 Credit Hours	110.00	160.00
Less than 7 Credit Hours — \$18.00 per credit hour		
Graduate Part-Time Students (600 Level Courses)		
11 Credit Hours	\$ 165.00	\$ 415.00
10 Credit Hours	165.00	365.00
9 Credit Hours	165.00	315.00
8 Credit Hours	165.00	265.00
7 Credit Hours	165.00	215.00
Less than 7 Credit Hours — \$27.00 per credit hour		

NOTE: When a combination of undergraduate and 600 level courses are taken, the full or part-time graduate University registration fee for the total number of hours taken, or a combination of undergraduate and graduate credit hour fees, whichever is lower, will be paid.

Alaskan residents as well as students from Hawaii, the Yukon Territory, and the Northwest Territories are exempt from a non-resident tuition fee. Alaskan residents are defined as persons 19 years of age or older who have established residence in Alaska for at least one year prior to the date set for

RESIDENCY

CORRECTIONS TO GENERAL INFORMATION

Page 7. mantel *should be* mantle

Page 10. *Delete Par. on Transcript fee. This fee is no longer charged.*

Page 15. *Make the following corrections:*

Bachelor's Degrees General Requirements:

First two paragraphs pertaining to physical education/R.O.T.C. requirement should be deleted.

As approved by the Academic Council, physical education and/or R.O.T.C. is no longer required for any baccalaureate degree at the University of Alaska.

Page 16. *Make the following corrections:*

Major Specialties Available for B.A. Degree — delete Business Administration. (*see B.B.A. degree.*)

Minor Specialties Available for B.A. Degree

Add: Eskimo

Replaces present B. A. requirements.

GENERAL REQUIREMENTS FOR B.A. DEGREE

	Credits
English 111 or equivalent, and English 211 or 213	6
Speech Communications	3
Major Complex	at least 23
Minor Complex	at least 12
Arts and Letters/History Electives including 5 or more one semester courses totaling	at least 15

(Majors in history may not include history courses in satisfying this requirement. For majors in the College of Arts and Letters this requirement will be substituted by a requirement of a minimum of 5 one semester course totaling a minimum of 15 credits outside the College of Arts and Letters. Repeatable courses may be counted only once in satisfying this requirement.)

*Other Electives Remainder of 130

The curriculum for each student must include courses taken in 4 colleges and 8 departments or programs outside of departments, exclusive of the 9-credit communications requirement. Courses cross-listed in a major department and other departments will be considered as being in the major department in determining distribution requirements. In those parts of the University of Alaska statewide system where no breakdown by colleges and/or department exists, distribution will be achieved by treating disciplines as they are represented in specific colleges, departments and/or programs on the College campus.

Replaces present B.S. Requirements

GENERAL REQUIREMENTS FOR B.S. DEGREE

English 111 and English 211 or 213	6
Speech Communication	3
Mathematics 200 or 203 or Applied Stat. 301	3 or more
Chemistry, Biology, or Physics (minimum of 6 credits each in two disciplines), including 2 credits of laboratory	16
Social Science (minimum 3 credits) and Humanities (minimum 3 credits), exclusive of 9-credit communications requirement . . .	15
Major Complex (see departmental curricula for specific requirements and for Minor Complex, if required)	variable
*Other Electives to bring total credits to	130

**Other general baccalaureate degree requirements as stated in the University of Alaska catalog will have to be met (i.e., 2.00 g.p.a., 24 hour upper division requirement, etc.).*

Page 24. *Replaces statement under credit by examination.*

Credit-by-Examination — An enrolled student is eligible to request credit-by-examination through the Registrar's Office. The request must be initiated a minimum of 40 days before the date of the examination. When his request is granted, the student is required to (1) pay the fees for the examination at the Comptroller's Office and (2) present the receipt at the Counselling Center a minimum of 40 days before the date of examination. A course in which a student has previously registered as an auditor may not be completed for credit-by-examination. The examination for a specific course is graded either P (pass) or F (fail) and is recorded as such on the

Page 24. — continued

permanent record. A student who fails to obtain an acceptable score on the examination may not repeat the examination within one year.

The General Examinations are graded on a credit-no-credit basis and only the area examinations passed with an acceptable score are recorded on the permanent record. The General Examinations and some Subject Examinations prepared for the College Level Examination Program by the Educational Testing Service have been approved as acceptable examinations to challenge general requirements or specific courses, respectively, by the academic departments concerned. A list of the approved CLEP Subject Examinations may be obtained at the Registrar's Office.

A person presenting a transcript with acceptable scores on the approved CLEP Examinations from the Educational Testing Service will be granted credit for the appropriate course. The University of Alaska grants six semester hours of credit for each area examination of the General Examinations offered through the College Level Examination Program.

Page 25-26. *Replaces W, WP, WF.*

W — Withdrawn. Given when a student makes a regular withdrawal from a class.

A student may, if circumstances warrant, withdraw from a class any time up to one calendar month prior to the end of the semester. A grade of "W" will be given. Student initiated withdrawals are not permitted during the last month of the semester. Grades of WP and WF will no longer be used to indicate a student's academic status at the time of withdrawal. The grade of "W" carries no grade points and does not affect the grade point average. The normal procedure for dropping a class or withdrawing from the University will still be followed, as outlined under Drop/Add on page 72.

Page 59. 3. High School Graduates — Associate Programs *should be changed to read:* Any high school graduate is eligible for admission to all associate degree programs except electronics technology. Those interested in this program should contact the program chairman.

Page 61. First Par. *Insert page 18 in last line.*

Fees at College Campus



	RESIDENT	NON-RESIDENT	SUMMARY OF SEMESTER CHARGES
Undergraduate Full-time Students			
Non-resident tuition		\$ 300.00	
University Fee (12 + credit hours)	\$ 100.00	100.00	
Campus Activity Fee	36.00	36.00	
*Health Service Fee (Approx.)	25.00	25.00	
Total Undergraduate Fees	\$ 161.00	\$ 461.00	
Part-time Undergraduate Students			
11 Credit Hours	\$110.00	\$ 360.00	
10 Credit Hours	110.00	310.00	
9 Credit Hours	110.00	260.00	
8 Credit Hours	110.00	210.00	
7 Credit Hours	110.00	160.00	
Less than 7 Credit Hours — \$18.00 per credit hour			
Campus Activity Fee	20.00	20.00	
Recreational Athletic Fee (\$5.00)	(Voluntary)	(Voluntary)	
*Health Service Fee (Approx. \$25.00)	(Voluntary)	(Voluntary)	
Full-time Graduate Students			
Non-resident Tuition		\$ 300.00	
600 — 700 Level Courses (12 + cred. hrs.)	\$ 150.00	150.00	
Campus Activity Fee	36.00	36.00	
*Health Service Fee (Approx. \$25.00)	25.00	25.00	
Total Graduate Fees	\$211.00	\$ 511.00	
Part-time Graduate Students (600 Level Courses)			
11 Credit Hours	\$165.00	\$ 415.00	
10 Credit Hours	165.00	365.00	
9 Credit Hours	165.00	315.00	
8 Credit Hours	165.00	265.00	
7 Credit Hours	165.00	215.00	
Less than 7 Credit Hours — \$27.00 per credit hour			
Campus Activity Fee (7-11 credit hours)	36.00	36.00	
Recreational Athletic Fee (\$5.00)	(Voluntary)	(Voluntary)	
Health Service Fee (\$25.00)	(Voluntary)	(Voluntary)	

*See Page 67 for health service fees.

NOTE: When a combination of undergraduate and 600 level courses are taken, the appropriate full or part-time graduate level University fee for the total number of hours taken or a combination of undergraduate and graduate credit hour fees, whichever is lower, will be paid.

Page 66, *Replaces fee schedules*

Residence Hall Rents and Meal Tickets

Double Rooms	\$250.00
Single Rooms	285.00
Meal Ticket	425.00

NOTE: Students taking less than seven semester hours credit are not eligible for residence hall occupancy.

Other Fees

Application Fee (Remit with Application)	\$ 10.00
Late registration Fee	
First Day	5.00
Each succeeding day	2.00
Change of Registration Fee (after 3rd day)	1.00
Credit by Examination Fee (each examination)	15.00
Student Health Fee	
Single Student	25.00
Student with Spouse	47.00
Student with Spouse and Children	69.00

NOTE: Students taking less than seven semester hours credit are not eligible for residence hall occupancy.

All fees approved by the Board of Regents, University of Alaska.

The university reserves the right to change or add to its fees at any time.

Student Advising

The University recognizes that academic success is promoted by close personal relationships between faculty and students. To foster this relationship it has established a system of faculty advising which enables the student to become well acquainted with the degree programs available at the University and assures involvement of faculty in assisting the student choosing a course of study.

There are three major divisions of the advising system:

CORE Advising Program — This program is the responsibility of the Academic Vice-President and is coordinated by a faculty member with assistance of the Dean of Students. The advisors are members of colleges and departments from all disciplines, chosen and recommended by their respective deans.

Students eligible for this advising are entering and transfer Freshmen or Sophomores.

The CORE Coordinator assigns students to advisors in accordance with the student's choice of college and department. The advisor functions as an authority on the requirements leading to a degree, to identify students having difficulty with their studies, and to be familiar with services of the University which may be of aid to the student. More importantly, he provides the dependable, consistent, personal contact which individualizes the University for the student.

The advisor maintains a comprehensive file of information of each advisee's academic progress. This usually includes the student's program of studies, petitions, grade reports, biographical data, test information and any notes on conferences.

He is responsible for helping the student plan his academic program. This planning is done at least once a semester at which time the advisor approves in writing the student's program for the coming semester. All changes in programs must be approved by the advisor before the change is made.

The following colleges are represented in the CORE Program:

College of Arts and Letters
College of Behavioral Sciences and Education
College of Biological Science and Renewable Resources
College of Business, Economics and Government
College of Earth Sciences and Mineral Industries
College of Mathematics, Physical Sciences and Engineering
Interim (for nondeclared students up to 60 credit hours)

Departmental Advising — This program is for students majoring in specific fields and is administered by individual colleges and departments. Each instructor may serve as a Department Faculty Advisor to students assigned to him by the department head or dean. The advisor has the responsibility of guiding the student through departmental and degree requirements.

Students may enter the Departmental Advising System after 30 credit hours and completion of the CORE Certification of Major Form. The student may elect to remain with the CORE Program until he has completed 60 credit hours. After completion of 60 credit hours, however, the student is no longer eligible for the CORE Program and is expected to choose a particular college and department for continued advising.

Student Orientation Services — Student Orientation Services attempts to offer specialized advisement for rural and native students. The staff counselors and part-time student counselors try to make the initial contact with University life as rewarding as possible for the student by helping select realistic course loads and steering the student toward courses which are specially designed to meet his educational needs. Students are rarely assigned to SOS for advisement but rather choose to make use of the program. As a student adjusts to campus life and as he finds an academic area of special interest to him, he is expected to change from SOS advisement to a regular departmental advisor.

Page 95-103. New department heads have been selected since the catalog was published. The department heads listed below replace those listed on pages 95-103.

College of Arts and Letters		Department Head for Academic Year 1971 - 72	
Walter J. Mueller, Dean			
Art		Mr. Glen C. Simpson	
English		Dr. Robert A. Terry	
Journalism		Mr. Jimmy Bedford	
Linguistics and Foreign Languages		Dr. Bruce Gordon	
Music		Mr. Duane J. Mikow	
Philosophy		Dr. Rudolph W. Krejci	
Speech, Radio and Drama		Mr. Walter G. Ensign, Jr.	
College of Behavioral Sciences and Education			
Wendell W. Wolfe, Dean			
Anthropology		Dr. John P. Cook	
Education		Dr. Charles K. Ray	
Health, Physical Education and Recreation		Dr. John C. Gilmore	
Home Economics		Miss Ann L. Walsh	
Psychology and Sociology		Mr. Richard G. Possenti	
College of Biological Sciences and Renewable Resources			
Brina Kessel, Dean			
Biological Sciences		Dr. Stephen A. Norrell	
Land Resources and Agricultural Science		Dr. Bonita J. Neiland	
Wildlife Management		Dr. Frederick C. Dean	
College of Business, Economics and Government			
Benjamin W. Perles, Dean			
Accounting		Mr. Milton Fink	
Business Administration		Mr. Dale Swanson	
Economics		Dr. Richard Solie	
History		Dr. William Hunt	
Office Administration		Mrs. Melba Pelosi	
Political Science		Dr. Ronald Chinn	
College of Earth Sciences and Mineral Industry			
Earl H. Beistline, Dean			
Geography		Dr. Herbert H. Rasche	
Geology		Dr. Carl S. Benson	
Mineral Engineering		Mr. Chris A. Lambert, Jr.	

Page 103. — continued

College of Mathematics, Physical Sciences and Engineering

Charles E. Behlke, Dean

Chemistry	Dr. G. Warren Smith
Civil Engineering	Mr. John L. Burdick
Electrical Engineering	Dr. Thomas D. Roberts
Electronics Technology Program	Mr. Foye L. Gentry
Engineering Management	Dr. F. Lawrence Bennett
Environmental Health Engineering Program	Dr. R. Sage Murphy
General Science	Dr. William S. Wilson
Mathematics	Dr. Robert W. Brown
Mechanical Engineering	Dr. J. B. Tiedemann
Physics	Dr. J. Roger Sheridan
Oceanography and Ocean Engineering Program	Dr. William Reeburg

Page 285. *The following new administrative personnel should be included in the Board of Regents and Administrative Council, page 285.*

Vide Bartlett, Secretary, 1971-1979; replaces Dorothy A. Wrede.

Don M. Dafoe, Ph.D., Vice President for Public Service; replaces Arthur S. Buswell.

Page 109. *Insert new minor program.*

ASIAN STUDIES **Interdisciplinary Minor Program**

A minor in Asian Studies provides instruction in the varieties of Asian languages and cultures through an interdisciplinary approach, and enables students to consolidate various course offerings into a meaningful and cohesive program relevant to several major fields of specialization.

REQUIREMENTS FOR ASIAN STUDIES MINOR

Complete 15 semester credits in approved courses in Asian Studies, distributed among at least three departments, and including material on at least two Asian countries.

Asian Studies Courses: Anth. 338, Hist. 121-122, 235, 236, 438, Geog. 311, Jap. 101-102, 201-202, P.S. 342.

Page 112-113.

BIOLOGICAL SCIENCES **College of Biological Sciences and Renewable Resources**

Changes in existing programs:

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

1. Delete Phys. 103-104 as a requirement and replace with "Physics, Geology, Applied Statistics, Chemistry and/or Mathematics — 8 credits."
2. Change the foreign language requirement to "Foreign Language — one collegiate year or 6 credits of social sciences and/or humanities beyond the general requirements for the B.S. degree."
3. Add 4 credits of biology electives.

REQUIREMENTS FOR A MINOR IN BIOLOGICAL SCIENCES

Change from 14 credits in biology to:

20 credits in biology including Biol. 105, 302 and 303 and two of the following courses: Biol. 201, 203, 208, 210, 239.

Page 116-117.

CHEMISTRY **College of Mathematics, Physical Sciences and Engineering**

Changes in existing programs:

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

1. Correct mathematics requirement to include Math 200.

2. Change Physics requirement from Phys. 103-104 to Phys. 105-106 or Phys. 211-212.

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

1. Add Chem. 491-492 as requirements.
2. Replace Ger. 101-102 or Rus. 101-102 with Ger. 111-112 or Russ. 111-112.

New Program:

CHEMICAL SCIENCE

Degree — Associate in Chemical Science

Minimum Requirements for Degree — 60 Credits

REQUIREMENTS FOR AN ASSOCIATE DEGREE IN CHEMICAL SCIENCE

Complete the following courses:

Chem. 105-106, General Chemistry or Chem. 211, Chemical Principles	4 or 8
Chem. 212, Intro. Quant. Analysis	4
Chem. 321-322, Organic Chemistry	6
Chem. 324, Organic Laboratory	3
Math. 200, 201, 202	12
Phys. 105-106, Univ. Physics	8
E.S. 101, Graphics	2
E.S. 201, Computer Tech.	3
Engl. 111, Meth. of Written Comm.	3
Speech Communications Elective	3
Electives to bring total credits to	60

ECONOMICS

College of Business, Economics and Government

Change in existing program:

REQUIREMENTS FOR B.A. DEGREE WITH AN ECONOMICS MAJOR

1. Eliminate the following foundation requirements:
Behavioral Sciences — Psych. Soc., Anth. — 9 credits
Math. 200 — 4 credits
P.S. 102 — 3 credits
2. Specify that economics electives must be at the 200 level or above.

New Program

REQUIREMENTS FOR B.S. DEGREE WITH AN ECONOMICS MAJOR

1. Complete the general requirements for a B.S. Degree listed on page 16.

Page 122-123. — *continued*

2. Complete the following foundation courses:
 - a. Economics 121-122 — Principles of Economics 6
 - b. Math. 121-122 — Intro. to Modern Algebra and Analysis 8
 - or
Math. 106 — College Algebra and Trigonometry 5
 - c. Math. 200 — Calculus 4
 - d. Accounting 101 3
 - e. P.S. 101-102 — American Government 6
3. Complete 30 additional credits in Economics, including:
 - a. Economics 221 — Introduction to Statistics 3
 - b. Economics 321 — Intermediate Microeconomics 3
 - c. Economics 324 — Intermediate Macroeconomics 3
 - d. Economics 425 — History of Economic Thought 3
 - e. Economics 426 — Statistical Methods 3
 - f. Economics 472 — Sem. in Contemporary Econ. 3
 - g. Electives in Economics (200 level or higher) 12(Six hours of the following courses may be included: B. A. 325, 343, 359, 371, 372, 423, 424, 425, 480, and Geog. 103.)

Page 123-125.

EDUCATION

College of Behavioral Sciences and Education

Changes in existing programs:

REQUIREMENTS FOR B.ED. DEGREE WITH AN ELEMENTARY EDUCATION MAJOR: (see page 124)

1. Transfer Sp.C. 111, Fund. of Oral Communications, 3 credits, from Recommended Courses (2.b.) to Required Courses (2.a.)
2. Transfer Engl. 318, Modern Grammar, 3 credits, from Required Courses (2.a.) to Recommended Courses (2.b.)

(Note: Sp.C. 241 and Sp.C. 211 should remain under Recommended Courses)

REQUIREMENTS FOR B.ED. DEGREE WITH A SECONDARY EDUCATION MAJOR: (see page 125)

1. Transfer Sp.C. 111, Fund. of Oral Communications, 3 credits, from Recommended Courses (2.b.) to Required Courses (2.a.).

(Note: Sp.C. 241 and Sp.C. 211 should remain under Recommended Courses).

Ed. 480, Education of the Culturally Different, is approved as a recommended course under requirement 6.c (page 125) for the Elementary Education major and under requirement 5.b. (page 125) for the Secondary Education major.

Page 130-131.

ELECTRICAL ENGINEERING

College of Mathematics, Physical Sciences and Engineering

Changes in existing program:

REQUIREMENTS AND SUGGESTED CURRICULUM FOR B.S.E.S. DEGREE (ELECTRICAL)

Change E.S. 111 and E.S. 122 requirement to read E.S. 111 or Phys. 105 and E.S. 122 or Phys. 106.

Page 137-139

FISHERIES BIOLOGY

College of Biological Sciences and Renewable Resources

Changes in existing program:

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

1. Reword statement about social sciences to the following:

****Sufficient elective credits to satisfy the minimum requirement of 135 credits are needed; 12 of these must be from courses which will satisfy the university's social science/humanities requirement for the B.S. degree. All electives must be approved by the head of the Department of Wildlife Management.

2. Delete Biol. 414 as a requirement.
3. Replace 3 credits English elective with 3 credits Speech Communications elective.

Page 143-144.

GEOLOGICAL ENGINEERING

College of Earth Sciences and Mineral Industry

Changes in existing program:

REQUIREMENTS AND CURRICULUM FOR B.S. DEGREE IN GEOLOGICAL ENGINEERING

1. Delete E.S. 101 and 111 as requirements.
2. Delete Econ. 121 and 3 credits social science elective.
3. Delete 3 credits English electives and 4 credits professional electives.
4. Change Sp.C. 111 to 3 credits speech communications elective.
5. Add 9 credits social science and humanities electives.

Page 144. — continued

6. Add E.S. 201 as a requirement.
7. Reduce total credits required from 135 to 130 (plus field geology).
8. Add the following options: Chem 211-212 or Chem 105-106; Phys 105-106 or Phys 211-212; C.E. 112 or Min. 202; Geol. 416 or Chem. 331; Geol. 341 or Min. 405.

Page 144-145.

GEOLOGY

College of Earth Sciences and Mineral Industry

Changes in existing program:

REQUIREMENTS AND CURRICULUM FOR B.S. DEGREE IN GEOLOGY

1. Change the foreign language requirement from 10 to 6 credits.
2. Delete 3 credits English elective.
3. Change Sp.C. 111 to 3 credits speech communications elective.
4. Add 3 credits professional electives and 10 credits free electives.
5. Add the following options: Chem 211-212 or Chem. 105-106; Phys 105-106 or Phys 211-212; C.E. 112 or Min. 202.

Page 146-148.

HEALTH, PHYSICAL EDUCATION AND RECREATION

College of Behavioral Science and Education

Changes in existing programs:

REQUIREMENTS FOR B.A. OR B.S. DEGREE WITH A PHYSICAL EDUCATION MAJOR

Delete the following courses from the selection: "Four Credits from the following courses:"

P.E. 493 — Special Topics Credits Arranged

P.E. 494 — Special Topics Credits Arranged

Page 148.

HEALTH SCIENCES, PRE-PROFESSIONAL CURRICULA

Replace third paragraph, page 148, with the following:

WASHINGTON, ALASKA, MONTANA AND IDAHO MEDICAL EXTENSION PROGRAM (W.A.M.I.)

In September 1971 the University of Alaska will start a collaborative program with the University of Washington Medical School under financial support of the Commonwealth

Page 148. — *continued*

Foundation of New York. A limited number of students who have suitable baccalaureate degrees, or in some cases, senior standing will be jointly admitted to the University of Alaska and the University of Washington Medical School. They will spend the fall semester at the University of Alaska taking four courses (Medical Science 500, 515, 518, and 551) and then enter the University of Washington Medical School for an appropriate period which may range from 6 to 8 quarters. Thereafter, they will be eligible to assume 'clerkships' with practitioners, clinics or hospitals within one of the four collaborating states. Under this revised curriculum students may reduce the conventional time taken to acquire an M.D. by as much as a full year.

The Medical Science courses listed will be taught at an advanced level (graduate equivalent) and are intended primarily for W.A.M.I. students who will receive additional tutorial instruction from the faculty. However, these courses will also be open to under-graduate students in good standing subject to permission of the instructor.

Modest financial support may be available to W.A.M.I. students during their stay at the University of Alaska and those W.A.M.I. students establishing Alaskan residence are eligible for tuition support under a program of the Western Interstate Commission on Higher Education while staying at the University of Washington Medical School.

Further information may be obtained from the Coordinator of the W.A.M.I. Program, College of Biological Sciences and Renewable Resources.

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HISTORY

College of Business, Economics and Government

Changes in existing programs:

REQUIREMENTS FOR B.A. DEGREE WITH A HISTORY MAJOR

1. Eliminate requirements of Econ. 121, P.S. 101-102.
2. Allow selection of either Hist. 131-132 or 121-122 as foundation courses.
3. Change history requirement beyond foundation courses from 20 to 21 credits, including the addition of Hist. 476 as a requirement.
4. Eliminate the requirement of 6 credits specified in both European and American history electives.

REQUIREMENTS FOR MINOR IN HISTORY

1. Allow either Hist. 101-102 or Hist. 121-122 as foundation courses.
2. Change elective requirements from 6 credits at upper division level to 6 credits above the 100 level.

HOME ECONOMICS

College of Behavioral Sciences and Education

New Program:

Degree — Associate of Arts

Minimum Requirements for Degree: 60 Credits

REQUIREMENTS FOR AN ASSOCIATE OF ARTS DEGREE IN EARLY CHILDHOOD DEVELOPMENT

General Requirements:

English 111, 211 or 213, or 67, 68	6
Sp.C. 111	3
History 131-132 or Pol. Sci. 101-102	6
Social Science — Psychology 101; Sociology 101 or Anthropology 101	3
Natural Science Electives	
Humanities Electives	
Other Academic Areas (At least 6 credits in any 2 elective areas)	12

Major Requirements:

H.E. 105 — Survey of Child Development Center Models	3
H.E. 120 — Child Nutrition and Health	3
Psy. 244 — Early Childhood Development	3
H.E. 155 — Activities for Young Children	3
H.E. 236 — Marriage and Family Life or Soc. 242 — The Family	3
H.E. 250-251 — Practicum in Early Childhood Development or B.S. 101-201 — Field Observation, Field Practice	6
B.S. 220 — Culture and Learning	3

Electives to total 60 credits

LINGUISTICS AND FOREIGN LANGUAGES

College of Arts and Letters

Changes in existing programs:

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

Foreign Language Major (German, French, Russian and Spanish) — Bachelor of Arts .

Delete reference to foreign language requirement for the B.A. degree.

Page 155. — continued

Linguistics — Bachelor of Arts

Delete reference to foreign language requirement for the B.A. degree and change foreign language requirement for the major to read as follows:

Complete 12 - 16 credits in each of two foreign languages; 12 credits in each foreign language will fulfill the requirement if all are at the 200 level or higher.

Foreign Language Minor

Change requirement to: A minor in a foreign language requires 12 - 21 credits. If all are at the 200 level or higher, 12 credits will fulfill this requirement.

Page 156-158.

MATHEMATICS

College of Mathematics, Physical Sciences and Engineering

Change in existing programs:

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

Increase approved mathematics electives from 15 to 18 credits.

REQUIREMENTS FOR B.S. DEGREE WITH A MAJOR IN MATHEMATICS

Delete the requirement of Phys. 211-212 and six additional credits of upper division science courses.

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MEDICAL TECHNOLOGY

College of Biological Sciences and Renewable Resources

Changes in existing program:

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

1. Specify mathematics requirement as Math. 106 and 200 or 203 or A.S. 301.
2. Add 3 credits Speech Communications elective.
3. Replace 6 credits English electives with 6 credits humanities electives.
4. Replace one year foreign language requirement with 6 credits social science/humanities electives.
5. Delete Phys. 103-104 as a requirement.

MINERAL ENGINEERING

College of Earth Sciences and Mineral Industry

Changes in existing program:

REQUIREMENTS AND CURRICULUM FOR B.S. DEGREE IN MINERAL ENGINEERING

1. Reduce minimum number of credits required from 134 to 130.
2. Replace E.S. 101 with Min. 101.
3. Change Sp.C. 111 to 3 credits speech communications electives.
4. Replace 3 credits mathematics electives with E.S. 201.
5. Add the option "Econ.121 or Social Science Elective — 3 credits."
6. Add the option "English, Humanities and/or Social Science Electives (minimum of 3 credits must be in Humanities) — 12 credits."

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Insert new program.

NORTHERN STUDIES

Interdisciplinary Program

New Program:

Degree — Bachelor of Arts

Minimum Requirements for Degree — 130 credits.

The purpose of the Northern Studies program is to give interested students a broader study of the northern regions — its environment, peoples and problems. The major in Northern Studies is a composite and interdisciplinary one. Students must meet the prerequisite requirements set by each department for particular upper division courses.

The Northern Studies Standing Committee: The members of the Northern Studies Advisory Committee are William R. Hunt, Chairman; Mark Fryer, John Cook, Peter McRoy, Donald Lynch, Lee Salisbury, Bill Evans and Mark LaPorte. Each college of the University is represented on the committee. Peter McRoy is the institute representative while Bill Evans and Mark LaPorte are student representatives.

REQUIREMENTS FOR A B.A. WITH A NORTHERN STUDIES MAJOR

1. Complete the general requirements for a B.A. degree listed on page 16.
2. Complete the following foundation courses:
Anthropology 326 — Arctic Ethnology 3

Geography 327 — Cold Lands	3
History 375 — History of the North Pacific & Arctic	3
3. Participate in the following seminars during the junior or senior year:	
History 491 — Northern Studies Seminar	3
History 492 — Northern Studies Seminar	3
4. In addition, the student should take at least one course in each of the following four areas and sufficient other courses in one of the areas to equal a total of 18 credits:	
1. Anthropology:	
Anthropology 328 — Arctic Archaeology	3
Anthropology 329 — Peoples of Central & Northern Asia	3
Anthropology 342 — Natives of Alaska	3
Linguistics:	
Linguistics 381 — Structural Linguistics	3
Linguistics 382 — Linguistics Analysis	3
Linguistics 388 — Alaskan Athapascan	3
Eskimo 201-202 — Intermediate Eskimo	6
2. Earth Sciences:	
Geography 105 — Elements of Physical Geography	3
Geography 302 — Geography of Alaska	3
Geography 306 — Geography of the U.S.S.R.	3
Geography 316 — Pleistocene Geography	3
Geography 401 — Weather and Climate	3
Geology 462 — Glacial and Pleistocene Geology	3
3. History:	
History 254 — History & Literature of Canada	5
History 341 — History of Alaska	3
History 344 — Twentieth Century Russia	3
History 380 — Polar Exploration & Its Literature	3
4. Ecology:	
Biology 303 — Principles of Ecology	3
W.M. 417 — Wildlife Management — Forest & Tundra	2
Land Resources 101 — Conservation of Natural Resources	2

With the approval of the committee students may make substitutions for some of the requirements in these four areas by taking such relevant courses as: C.E. 603; Arctic Engineering; Economics 493/688: Economics of Natural Resources; OCN. 693: Arctic Oceanography; and such other courses as are approved by the committee.

NURSING

Anchorage Community College

New Program

Degree — Associate of Arts

Minimum Requirements for Degree — 60 Credits

REQUIREMENTS FOR AN ASSOCIATE OF ARTS DEGREE IN NURSING

1. Complete the following specific requirements:
 - English 6
 - American Government or American History sequence 6
 - Speech 3
2. Complete the following general requirements. Select three areas and complete six credits in each:
 - Humanities
 - Social Science
 - Natural Science (10 credits incorporated in nursing curriculum)
 - Mathematics
 - Other (accounting, physical education, home economics, etc.) (include 6 credit hours of nursing courses in this category)
3. Major Specialty. Complete the following:
 - Nurs. 150 — Nursing Principles in Health Promotion I 5
 - Nurs. 151 — Nursing Principles in Health Promotion II 8
 - Nurs. 252 — Clinical Nursing 8
 - Nurs. 253 — Clinical Nursing 8
 - Nurs. 254 — Maternal-Child Nursing 8
 - Nurs. 255 — Issues in Nursing 3

SUGGESTED CURRICULUM FOR A.A. DEGREE IN NURSING

FALL SEMESTER

SPRING SEMESTER

FIRST YEAR

15 Credits

17 Credits

Sp.C. 111 — Fund. of Oral Comm. 3
Chem. 103 — Contemporary Chem. 4
Biol. 111 — Human Anatomy & Phys. 3
Nurs. 150 — Nursing Principles in
Health Promotion I 5

Engl. 111 — Meth. of Written Comm. 3
Biol. 112 — Human Anatomy & Phys. 3
*Elective 3
Nurs. 151 — Nursing Principles in
Health Promotion II 8

SUMMER SESSION

11 Credits

Nurs. 252 — Clinical Nursing 8
Engl. Elective 3

SECOND YEAR

14 Credits

14 Credits

P.S. 101 — Intro. to P.S. or
Hist. 131 — American History 3
*Elective 3
Nurs. 253 — Clinical Nursing 8

P.S. 102 — Intro. to P.S. or
Hist. 132 — American History 3
Nurs. 254 — Maternal-Child Nurs. 8
Nurs. 255 — Issues in Nursing 3

*A total of six credits must be taken in a single area: humanities, social science or mathematics. The electives may not be divided among these areas.

OFFICE ADMINISTRATION

College of Business, Economics and Government

Changes in existing programs:

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

1. Add the following requirements: Psy. 101 or Soc. 101, P.S. 101, Econ. 121.
2. Add the requirement of Math 110 plus 8 credits in mathematics or a lab science.
3. Add the following business administration requirements: B.A. 325, 343 and 361 or 480. Add the requirement of O.A. 292.
4. Separate major requirement into 3 options, as indicated, and change the following requirements:
 - a. O.A. Majors — Add B.A. 332 or B.A. 424
 - b. Bus. Education Option 1 (Comprehensive) — no change except as noted in general and core requirements.
 - c. Bus. Education Option 2 (Basic Business) — Add Acct. 210, 252, 301 or 315, 332, 424.

REQUIREMENTS FOR A.O.A. DEGREE

1. Change accounting requirement from Acct. 215-216 to Acct. 51 and 52 or Acct. 101 and 102.
2. Change economics requirement from Econ. 121 and 122 or P.S. 102 to Econ. 101 or 121 and Econ. 122 or P.S. 102.
3. Change speech requirement to Sp.C. 51 or Sp.C. 111.

New Program:

REQUIREMENTS FOR OFFICE ADMINISTRATION MINOR

A minor in Office Administration consists of the following 19 credits:

O.A. 102 — Intermediate Shorthand	3
O.A. 105 — Intermediate Typewriting	2
O.A. 106 — Advanced Typewriting	2
O.A. 201 — Advanced Shorthand	3
O.A. 231 — Business Correspondence	3
O.A. 203 — Office Machines	3
O.A. 302 — Executive Secretarial Procedures	3

PHYSICS

College of Mathematics, Physical Sciences and Engineering

Changes in existing programs:

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

Change foundation courses from Phys. 103-104 to Phys. 105-106 and 211-212.

REQUIREMENTS FOR B.S. DEGREE WITH A MAJOR IN PHYSICS

Replace Phys. 103-104 with Phys. 105-106 and replace Math. 314, 319 or 405 and 320 or 405 with 9 credits mathematics electives.

Page 176-177
POLITICAL SCIENCE
College of Business, Economics and Government

Changes in existing program:

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

1. Delete Phil. 201 and Econ. 221 as requirements.
2. Add the following statement: Basic courses in philosophy, sociology and psychology are strongly recommended for majors. Also, a course in statistical interpretation is considered essential to those contemplating graduate study.

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PSYCHOLOGY
College of Behavioral Sciences and Education

Changes in existing programs:

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

1. Delete Psy. 301 as a general requirement and add Psy. 406 and 464.
2. Add Psy. 338 as a selection and rearrange selection of remaining psychology credits as follows:
Clinically-Oriented Courses: 9 credits from the following:
Psy 245 — Child Development 3
Psy 246 — Adolescence 3
Psy 302 — Social Psychology 3
Psy 338 — Abnormal Psychology 3
Psy 373 — Psychological Testing 3
Psy 433 — Clinical Psychology 3
Experimentally-Oriented Courses: 9 credits from the following:
Psy 301 — History and Systems of Psychology 3
Psy 362 — Intermediate Experimental Psychology 3
Psy 407 — Motivation 3
Psy 465 — Perception 3
Psy 473 — Social Science Research 3
3. Reduce total psychology credit requirement from 38 to 36 credits.
4. Add the requirement of nine credits from the following: One course each from Anthropology, Philosophy and Sociology.

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SOCIOLOGY
College of Behavioral Sciences and Education

Changes in existing program:

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

1. Delete the following requirements: Soc. 363, Soc. 407 and 11 credits of sociology electives.

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2. Add the following requirements:

Soc. 304 — Culture and Personality	3
Soc. Electives (Soc. 363 and 407 recommended)	9
9 credits composed of one course each from Anthropology, Philosophy and Psychology	9

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Insert new program

SPEECH COMMUNICATION

Anchorage Community College

Degree — Associate of Arts

Minimum Requirements for Degree — 60 credits

New Program:

REQUIREMENTS FOR AN ASSOCIATE OF ARTS DEGREE IN SPEECH COMMUNICATION

1. Complete the general associate of arts degree requirements.
2. Complete 20-30 credits of major specific requirements selected from the following:

Sp.C. 241 — Public Speaking I
Sp.C. 242 — Public Speaking II
Sp.C. 201 — Debate Practicum
Sp.C. 236 — Interviewing
Sp.C. 235 — Discussion
Sp.C. 211 — Voice and Diction
Sp.C. 244 — History of Rhetorical Theory
Sp.C. 245 — History of American Public Address
Sp.C. 246 — Contemporary Public Address
Sp.C. 212 — Speech Pathology

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WILDLIFE MANAGEMENT

College of Biological Sciences and Renewable Resources

Changes in existing program:

**REQUIREMENT AND CURRICULUM FOR B.S. DEGREE WITH A MAJOR IN WILDLIFE
MANAGEMENT**

1. Reword statement about social sciences to the following:

****Sufficient elective credits to satisfy the minimum requirement of 135 credits are needed; 12 of these must be from courses which will satisfy the university's social science/humanities requirement for the B.S. degree. All electives must be approved by the head of the Department of Wildlife Management.
2. Delete Biol. 414 as a requirement.
3. Replace 3 credits English elective with 3 credits Speech Communications elective.

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ACCOUNTING

New Courses:

Acc. 603 3 Credits Summer

Accounting Theory (3+0)

An examination and discussion of theoretical issues and developments in accounting with emphasis on contemporary problems of financial reporting. (Prerequisites: Acc. 401, 402, 351.) *Offered only at ACC.*

Acc. 615 3 Credits Spring

Tax Planning & Research (3+0)

Tax planning for individuals, business organizations, estates, and trusts is explored by a study of the taxes which affect such plans. Special emphasis will be placed on planning for business organizations. (Prerequisites: Acc. 210, 403.) *Offered only at ACC.*

Acc. 621 3 Credits Fall

Advanced Cost Accounting (3+0)

Case studies as they relate to special areas of profit planning for both a manufacturing and non-manufacturing company. Budget preparation and cost-volume-profit analysis in evaluating feasible profit plans. The use of PERT and other quantitative methods. (Prerequisite: Acc. 351.) *Offered only at ACC.*

Acc. 634 3 Credits Spring

Application of Accounting Theory (3+0)

A study of specialized problems of industry and governmental accounting. Special attention will be given to questions which will prepare the student for the uniform Certified Public Accounts examination. (Prerequisites: Acc. 401, 402, 351.) *Offered only at ACC.*

Acc. 642 3 Credits Fall

Advanced Auditing (3+0)

The application of auditing principles and procedures to actual situations. Analysis of auditing bulletins promulgated by the American Institute of Certified Public Accountants. (Prerequisite: Acc. 452.) *Offered only at ACC.*

Acc. 650 3 Credits Summer

Management Accounting Seminar (3+0)

A graduate course for non-accounting majors which deals with the developments and uses of accounting. Readings are assigned on an individual basis in the various areas covered in the course. These areas are: 1) the development

of accounting principles, 2) the part played by various accounting associations and government bureaus, 3) the uses of cost accounting data for analysis and control, and 4) auditing. *Offered only at ACC.*

Acc. 673 3 Credits Fall

Controllership (3+0)

A study of the controllership function and control through the accounting system. Internal auditing, budgeting, capital budgeting, rate of return, variances and allocation of responsibility in the controllership function. (Prerequisites: Acc. 401, 402, 351.) *Offered only at ACC.*

Page 200.

BEHAVIORAL SCIENCE

New Course:

B.S. 220 3 Credits Fall

Culture and Learning (3+0)

Cultural child rearing practices and their effects on learning. Includes acculturation processes and learning factors in early childhood among Alaskan ethnic groups.

Page 200.

BIOLOGY

New Course:

Biol. 111 3 Credits Fall

Biol. 112 3 Credits Spring

Human Anatomy & Physiology (2+3)

The study of structure and function of the human body as related to the skeletal, muscular, nervous, and cardiovascular systems. Emphasis on inter-relationship between systems. Second semester is a continuation with the study of structure and functions of the digestive, urinary, respiratory, reproductive and endocrine systems. Microbiology incorporated. *Offered only at ACC.*

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BUSINESS ADMINISTRATION

New Courses:

B.A. 604 3 Credits Summer

Systems Analysis (3+0)

Definition of models and systems; introduction to probabilistic models and network flow

problems; law of requisite variety system simplification; introduction to models of linear systems search procedures and techniques; symptom-cause tables; system treatment and improvement; basic systems analysis models. *Offered only at ACC.*

B.A. 605 3 Credits Fall
Deterministic Business Models Spring
(3+0)

Management decision theory; linear programming problems; the simplex algorithm; transportation problems; transshipment and assignment problems; scheduling algorithms; network analysis including PERT; dynamic programming; game theory. Use of computer subroutines of deterministic models to solve business problems. (Prerequisite: B.A. 604.) *Offered only at ACC.*

B.A. 606 3 Credits Fall
Probabilistic Business Models Spring
(3+0)

Queing theory; deterministic and stochastic inventory models; Markov processes; use of dynamic programming for Markov processes; basic principle of simulation. Use of computer techniques to process business probabilistic models. (Prerequisite: B.A. 605.) *Offered only at ACC.*

B.A. 607 3 Credits Summer
Business Simulation (3+0)

Methods and procedures for simulating large-scale systems with the digital computer; generation of random numbers and stochastic values; economic simulation models; design of simulation experiments; the general activity simulation program (GASP) language; industrial dynamics; laboratory assignments using computer. (Prerequisite: B.A. 606.) *Offered only at ACC.*

B.A. 608 3 Credits Fall
Quantitative Systems Seminar (3+0)

Use of quantitative techniques to solve actual industrial problems submitted by Alaskan firms. Definition, solution, documentation and presentation of problems. (Prerequisite: B.A. 607.) *Offered only at ACC.*

B.A. 609 3 Credits Summer
Executive Decision Making (3+0)

Organizations and decisions, the theory of decisions, the nature of models, production decision problems, marketing decision problems, finance decision problems. A non-rigorous treatment of quantitative systems

emphasizing computer usage. Not open to quantitative systems candidates. (Prerequisite: Permission of instructor or student's advisory committee.) *Offered only at ACC.*

B.A. 610 3 Credits Spring
Seminar in Management Information
Systems (3+0)

Selected topics in management information with emphasis on role of manager. Establishing a uniform data base, design of management information systems, information retrieval using management oriented programming languages. Not open to quantitative systems candidates. (Prerequisite: Permission of instructor.) *Offered only at ACC.*

B.A. 611 3 Credits Fall
Seminar in Production (3+0)

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, queing theory. Selected current problems and topics. (Prerequisite: B.A. 604.) *Offered only at ACC.*

B.A. 650 3 Credits Fall
History and Development of Spring
Management & Organizations (3+0)

A survey course designed to provide the student with an historical perspective of the changing nature and role of organizations and, more recently, management, in preindustrial, industrial and post-industrial civilizations. *Offered only at ACC.*

B.A. 651 3 Credits Fall
Organizational Behavior (3+0) Summer

A detailed study of organized behavior, including such concepts as leadership styles, authority, organizational change, among many others. *Offered only at ACC.*

B.A. 653 3 Credits Fall
Management of International Spring
Operations (3+0)

A study of multi-national corporate management and the problems and challenges of world-wide management strategies in finance, personnel, production, marketing and other functional decision areas. *Offered only at ACC.*

B.A. 655 3 Credits Spring
Administrative Policy (3+0) Fall

A case study course designed to provide students with an opportunity to utilize their

knowledge in various functional areas in practical problem solving situations. *Offered only at ACC.*

B.A. 657 3 Credits Fall
Management Decision Making - Spring
Computer Gaming (3+0)
 Decision making exercises employing computerized models. *Offered only at ACC.*

B.A. 671 3 Credits Fall
Advanced Computer Techniques (3+0)
 Computer systems analysis and design; information retrieval; management information systems; manager oriented programming languages; standardization of business data processing. (Prerequisite: B.A. 371.) *Offered only at ACC.*

B.A. 672 3 Credits Summer
Computer Workshop (3+0)
 Advanced programming concepts; use of computer to solve actual management problems; selection of pertinent topic; development of computer program; documentation and presentation of results. (Prerequisite: B.A. 604, 671.) *Offered only at ACC.*

B.A. 683 3 Credits Fall
Readings in Management and Spring,
Organizational Behavior (3+0) Summer
 Independent reading and discussion sessions between the student and his faculty chairman. Designed to fill out the student's background and suggest directions for his continued development after graduation. This course is the final-culminating effort between student and faculty. (Prerequisites: B.A. 651, 655.) *Offered only at ACC.*

B.A. 685 3 Credits Spring
Advanced Problems in Finance (3+0)
 An advanced course involving the analysis of cases in finance, readings and student research. *Offered only at ACC.*

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ECONOMICS

New Courses:

Econ. 606 3 Credits Fall
Economic History (3+0)
 Topics in European and American economic history with emphasis on problems and issues relevant to growth. Change in pre-industrial and

industrializing economics in historical perspective. (Prerequisites: Econ. 691, 692.)

Econ. 607 3 Credits Fall
Public Finance and Taxation (3+0)
 Role of government expenditures in light of welfare economics, direction and development of expenditures; types of taxes, their distributional and allocative effects; pricing policies in government enterprises; compensatory finance; the public debt. (Prerequisites: Econ. 691, 692.)

Econ. 608 3 Credits Spring
Monetary Theory (3+0)
 Advanced topics in monetary theory with special reference to policy criteria and control techniques. (Prerequisites: Econ. 691, 692.)

Econ. 609 3 Credits Fall
Industrial Organization and Public Policy (3+0)
 A study of market structure and performance, mergers, stochastic theories of industry structure; innovation, and technological change; location and transportation; public utilities; problems in the formation of public policy. (Prerequisite: Econ. 691.)

Econ. 610 3 Credits Fall
Mathematical Economics (3+0)
 Application of theorems from calculus, matrix algebra, and probability theory, in various areas of economics such as linear programming, and non-linear programming, input/output analysis, game theory, demand theory, production theory and expected utility theory.

Econ. 612 3 Credits Spring
Econometrics (3+0)
 Applications of statistical methods in testing economic theory and estimating economic relationships. Emphasis on multiple regression analysis, serial correlation, and other problems, and simultaneous equation methods. Selected applications in economics. (Prerequisites: Econ. 691, 692, 610.)

Econ. 615 3 Credits Spring
Seminar in Labor Economics and Wage Determination (3+0)
 Wage levels, structure; income distribution, effects of education on earnings; history of labor unions in the United States; economic, political and social impact of unionism. (Prerequisites: Econ. 691, 692.)

Econ. 620 3 Credits Spring
International Economics (3+0)

Capital movements. Balance of payments adjustments. Causes of trade and its effects on the allocation of resources, income distribution, growth and development, commercial policies. (Prerequisites: Econ. 691, 692.)

Econ. 624 3 Credits Spring
Petroleum Economics (3+0)

Economics of petroleum exploration and extraction; review of public policies governing petroleum industry, import policies, tax concessions, etc. (Prerequisites: Econ. 610, 691, 692.)

Econ. 630 3 Credits Spring
Economic Planning (3+0)

Course description: "Intensive examination of the structure and planning of the Soviet and East European economies; analysis of theoretical and operational dimension of economic planning; choice, design, and efficiency of central planning instruments are evaluated." (Prerequisites: Permission of Instructor.)

Econ. 640 3 Credits Spring
Economics of Transportation (3+0)

Economic aspects of the transportation industry with special emphasis on problems of regulation and public policy; analysis of intermodal change. (Prerequisites: Econ. 610, 691, 692.)

Econ. 686 3 Credits Fall
Statistical Decision Theory (3+0)

Emphasis will be placed on the measurement and interpretation of economic variables in the decision making process.

Course change:
Change Econ. 221 to:

Econ. 221 3 Credits Fall
Introduction to Statistics for
Economics and Business (3+0)

Problems in economics and business translated into statistical terms. Organizing of data; identifying of populations and their parameters; sample selection and use of sample data; linear correlations; time series analysis; index numbers. (Prerequisite: Math. 106 or Math. 122.)

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EDUCATION

New courses:

Ed. 384 3 Credits Fall
The Exceptional Child (3+0)

Characteristics, identification, diagnosis, and remediation procedures for use with Exceptional Children. (Prerequisites: Ed. 313 and prerequisites thereto and junior standing.)

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ENGLISH

New courses:

Engl. 131 3 Credits Fall-Spring
Introduction to Literature (3+0)

A basic introduction to fiction, drama, verse; to the terminology of literary study; and to the analysis and appreciation of literature.

Engl. 249 3 Credits Fall-Spring
Aleut, Eskimo, and Indian Literature
of Alaska in English Translation (3+0)

Collection, translating (where necessary), classifying, analyzing, and appreciating oral and written legends, myths, songs, and other materials in a workshop situation. (Prerequisite: Some familiarity with Aleut, Eskimo, or Indian literature of Alaska and permission of instructor.)

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ENVIRONMENTAL HEALTH
ENGINEERING

Course changes:
Change E.H.E. 401 to:

E.H.E. 401 4 Credits Fall
Environmental Health Engineering
Measurements (2+6)

Theory and laboratory procedures for determining quality of water supplies, natural water quality, pollution loads, and water and waste-water treatment plant parameters. Experiments on unit processes of treatment systems are included (Prerequisites: C.E. 441 or graduate standing.)

Change E.H.E. 601 to:

E.H.E. 601 2 Credits Spring
Water Quality Control (2+0)

Stream and estuarine analysis, ocean disposal systems, diffuser analysis and design, control of thermal effluents, and low flow augmentation. (Prerequisites: Biol. 341, E.H.E. 606.)

Change E.H.E. 605 to:

E.H.E. 605 4 Credits Fall
Chemical and Physical Water and
Wastewater Treatment Processes
(4+0)

The theory and design of chemical and physical unit processes utilized in the treatment of water and wastewater. Sedimentation, flotation, ion exchange, coagulation, precipitation, filtration, disinfection, reverse osmosis, and aeration theories will be studied. Design problems for all unit processes.

Change E.H.E. 606 to:

E.H.E. 606 4 Credits Spring
Biological Treatment Processes (4+0)

Study of the theoretical aspects of wastewater treatment by biological processes including activated sludge, trickling filters, sludge digestion and sludge processing. Analysis and design of biological treatment facilities. Nutrient removal processes. (Prerequisite: E.H.E. 605.)

Courses deleted:

E.H.E. 608
E.H.E. 610

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GEOGRAPHY

New courses:

Geog. 691 Credits Arr. Fall
Geog. 692 Credits Arr. Spring
Seminar

Selected topics in geography. (Admission by arrangement.)

Geog. 693 Credits Arr. Fall
Geog. 694 Credits Arr. Spring
Special Topics.

Various subjects studied. (Admission by arrangement.)

Geog. 697 Credits Arr. Fall
Geog. 698 Credits Arr. Spring
Thesis

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GEOLOGY

New courses:

Geol. 106 4 Credits Fall
Man's Physical Environment (3+3)

A summary of the evolution of the earth: the sequence of geologic events and the evolution and succession of life. A study of the materials of the earth, the processes affecting changes upon and within it. Emphasis on geologic processes important in today's environment and depositional environments of the past, as an aid to comprehension of extinctions and evolution. (Prerequisites: High school biology and geography. Intended for non-geology majors.)
Offered only at ACC.

Geol. 302 3 Credits Spring
Marine Geology (3+0)

Survey of marine geology, including structure and composition of ocean basins and continental margins, chemical and physical properties of marine sediments, geological processes in the oceans, physical resources, and conservation/pollution concerns. (Prerequisite: Geol. 101-102 or permission of the instructor.)

Geol. 405 3 Credits Fall
Geochronology (3+0)

Study of the radiometric and biological clocks useful in geologic studies and study of the developing time scale for earth history. (Prerequisites: Upper-division standing in geology or geophysics or consent of the instructor.)

Geol. 607 3 Credits Fall
Paleomagnetism (3+0)

Description of the geomagnetic field with particular emphasis on paleomagnetism and paleomagnetic techniques.

Geol. 614 3 Credits Spring
Marine Geophysics (3+0)
(Same as OCN 614.)

Marine geophysical methods including gravity, magnetics, refraction and reflection profiling, heat flow measurements. Geophysical signatures of oceanic plates and of their accreting and consuming margins.

Geol. 641 2 Credits Fall
Advanced Invertebrate Paleontology
(2+0)

In-depth study of the anatomy, classification, stratigraphic and geographic distribution, life

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habits, and environmental significance of selected invertebrate fossil groups.

Geol.	657	3 Credits	Fall
Geol.	658	3 Credits	Spring
	Seismology (3+0)		
	(Same as Phys. 657, 658.)		

Propagation of elastic waves in layered media.
(Admission by arrangement.)

Course changes:

Change Geol. 101 to:

Geol.	101	3 or 4 Credits	Fall
	General Geology (3+0 or 3+3)		

Introduction to physical geology; a study of the earth, its materials, and the processes that effect changes upon and within it. Optional laboratory training in the use of topographic maps and the recognition of common rocks and minerals.

Change Geol. 416 to:

Geol.	417	3 Credits	Fall
Introduction to Geochemistry (3+0)			
Introduction to chemistry of the earth.			
(Prerequisites: Chem. 105, 106.)			

Change Geol. 613 to:

Geol.	613	3 Credits	Fall
	Advanced Marine Geology (3+0)		
	(Same as OCN 613)		

An intensive study of marine geologic problems and processes based upon extensive reading in the current literature and conducted in seminar style. (Prerequisites: senior or graduate standing in geology or appropriate interdisciplinary programs; or permission of the instructor.)

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HISTORY

New courses:

Hist.	200	3 Credits	Fall
	Heritage of Alaska Natives (3+0)		

The methodology of ethnohistory of Alaska Natives and consideration of cultural contacts, cultural breakdowns and interaction of Native with other peoples.

Hist.	602	1 Credit	Spring
	The Teaching of History		

A one-credit course conducted by the members of the Department of History and required of

all candidates for the M.A. in History and Master of Arts in Teaching (History). Discussions on the problems of teaching history, the materials available, the suitability of various techniques and materials at different levels, and the use of guides, indexes, bibliographies, handbooks, atlases, etc.

Course changes:

Change Hist. 475 and 601 to:

Hist.	475	3 Credits	Fall
Hist.	476	3 Credits	Spring
	Historiography and Historical Method (3+0)		

A two-semester sequence. Readings, lectures, and discussions on the nature of history, the history of historical study and writing, recent tendencies in historical scholarship, and methods of historical research. Lectures, etc., continue in the spring semester, which is devoted also to completion of two research papers begun in the fall. Lectures, discussion leadership, and direction of research papers are by the department staff.

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HOME ECONOMICS

New courses:

H.E.	105	3 Credits	Fall
	Survey of Child Development Center Models (2+0)		

Introduction to various approaches used today in child development centers.

H.E.	120	3 Credits	Fall
	Child Nutrition and Health (3+0)		

Nutrition, food selection and meal planning in relation to feeding young children. Common diseases and illnesses of early childhood. Emergency first aid.

H.E.	155	3 Credits	Spring
	Activities for Young Children (2+3)		

Selection, development and use of materials for art, literature, music, science and play activities for young children.

H.E.	193	3 Credits	Fall
	Special Topics "The Art of Skin Sewing" (3+0)		

Basic techniques of sewing skins including skin selection, preparation, patterns, cutting, stitching, applied designs, as used by the Natives of the Northern Regions of Alaska.

H.E. 250 6 Credits Fall-Spring
H.E. 251
Practicum in Early Childhood
Development (1+6)

Supervised participation in a program designed for young children. Seminar attendance required. (Prerequisites: H.E. 105, 150, 155.)

Page 247. *Insert new courses.*

LIBRARY SCIENCE

New courses:

Lib. Sci. 101 1 Credit Fall-Spring
Library Skills (0+0)

An independent study course in college library skills and some resources and facilities common to academic libraries in general and to the Rasmuson Library in particular. No class sessions are held; the student works at his individual rate and on his own time schedule.

Lib. Sci. 201 2 Credits Spring
Gen. Bibliography (2+0)

The General Bibliography course introduces the history and organization of the world of books, the means of access to them, and the formal principles of describing them through the preparation of an annotated bibliography.

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MATHEMATICS

New courses:

Math. 203 4 Credits Fall
Finite Math. (4+0)

A finite mathematics course designed for non-math majors. Topics covered include: Symbolic logic, partitions, binomial and multinomial theorems, probability, finite stochastic processes, linear algebra, Markov chain, linear programming, game theory. (Prerequisite: Math. 200 or permission of the instructor.)

Page 253. *Insert new courses.*

MEDICAL SCIENCE

New courses:

Med.S. 500 2 Credits Fall
Medicine and Society (2+0)

Social aspects of medical care delivery and psychological aspects of disease: adjustment to chronic and terminal disease; disease in both young and aged; psychological adjustment to

society; family planning, adoption, and abortion; economic aspects of health coverage; role of State and Federal agencies in health care delivery; etc. (Prerequisite: upper division standing.)

Med.S. 515 4 Credits Fall
Physiological Control (3+0+1)

Fundamentals of physiologic control, including membrane transport, function of nervous and sensory system, muscle contraction, and introduction to cardiovascular and endocrine regulation. Emphasis on physiological control systems and feed-back concepts. Introductory pharmacology, including drug absorption, metabolism, detoxification, and excretion; mechanism of action of drugs, and variability of dose response. Major concepts illustrated by clinical conditions. (Prerequisites: Medical school freshman status or concurrent enrollment in Med. 551 and consent of instructor.)

Med.S. 518 5 Credits Fall
Microanatomy (3+3+1)

Human embryology from fertilization through establishment of major organ systems; structural (light and electron microscope) and functional relationships of tissues and selected organs. Congenital malformations and pathologic alterations discussed to elucidate normal structure and function. (Prerequisite: Medical school freshman status or consent of instructor. Basic knowledge of biological chemistry highly recommended.)

Med.S. 551 6 Credits Fall
Biochemistry (4+4+1)

An interdisciplinary course in biochemistry; cytology and cytogenetics; elementary microbial physiology, and genetics; mammalian metabolism, nutrition, and basic genetics. Medical problems used to illustrate major principles. (Prerequisite: Medical school freshman status or one year of organic chemistry or consent of instructor.)

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MUSIC

New courses:

Mus. 103 3 Credits Fall
Music Fundamentals (3+0)

Rudiments of music for students with little or no prior training in music reading. Offered only at ACC.

Sp.C. 236 3 Credits Fall
Interviewing (2+2)

The interview is considered a face-to-face interpersonal communication relationship. This course examines the theories and individual responsibilities associated with the informational, employment, and persuasive interviews. Application of student knowledge is examined as individuals are placed in role-playing interview situations. *Offered only at ACC.*

Sp.C. 244 3 Credits Fall-Spring
History of Rhetorical Theory (2+2)

This course is designed to acquaint the students with the ancient beginnings and background, the historical development, and the current status of rhetorical theory. *Offered only at ACC.*

Sp.C. 245 3 Credits Fall-Spring
History of American Public Address (2+2)

Designed to acquaint the student with the role of speakers and speaking in the historical development of the United States. It considers public address as a force in history and focuses on particular issues with certain historical periods and important speakers who considered these issues. *Offered only at ACC.*

Sp.C. 246 3 Credits Fall-Spring
Contemporary Public Address (2+2)

Oriented toward a study of the speeches of contemporary speakers and the role of rhetoric and public address in contemporary society. Speakers and speeches are to be selected from political, governmental, educational, industrial, social, and religious settings. *Offered only at ACC.*

Sp.C. 380 3 Credits Spring
Basic Research in Communication (3+0)

To acquaint the student of Speech Communication and Speech Pathology with the advantages and limitations of various basic research designs utilized in Speech research. To give him a working knowledge of various specialized instruments including the Sonograph and Console Audiometer.

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SPEECH PATHOLOGY

New courses:

Sp.P. 231 3 Credits Fall-Spring
Audiology I (3+0)

Structure, function, and pathologies of the hearing mechanism. Contribution of hearing processes to communication. Assessment of hearing by pure-tone audiometry.

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THEATRE

Course changes:

Change Thr. 331 to:

Thr. 331 3 Credits Fall-Spring
Directing (1+4)

Direction of short plays for drama lab productions. Prerequisites: Thr. 321 or admission by arrangement.

Change Thr. 351 to:

Thr. 351 3 Credits Fall-Spring
Makeup for Theatre (1+4)

Theatrical makeup for actors, teachers, directors, 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.)

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WILDLIFE MANAGEMENT

New Courses:

W.M. 435 2 Credits Fall
Problems in Water Pollution Biol. (2+0)

Effects of man-caused environmental stresses on the composition and dynamics of aquatic communities. Changes in diversity and matter and energy transfer. Biological indices. Water quality standards and use classifications. (Prerequisites: Biol. 303, W.M. 423 or permission of the instructor.)

~~W.M. 627~~ 3 Credits Fall
~~Invertebrate Fisheries Biology (2+3)~~

The taxonomy, structure, physiology, and life histories of some commercially important marine shellfishes. Larval development, behavior, reproductive and feeding biology. Interrelationships of marine animals. (Prerequisite: Biol. 203.)

~~W.M. 628~~ 3 Credits Spring
~~Fin-fish Fisheries Biology (2+3)~~

The taxonomy, structure, and life history of some commercially important marine fishes. Distributions and seasonal movements; behavior and feeding biology. Techniques of aging and estimating stock size and productivity. (Prerequisites: Biol. 309 or equivalent, or permission of the instructor.)

~~W.M. 629~~ 2 Credits Fall
~~Sampling in the Marine Environment (1+3)~~

An evaluation of classical and current methods

for sampling some biological and biologically related parameters (physical, chemical, geological) of marine systems. Demonstration and use of field and laboratory techniques. Problems in calibration and interpretation of data. (Prerequisites: Permission of instructor.)

Course change:

Change W.M. 625 to:

~~W.M. 625~~ 3 Credits Spring
~~Fishery Ecology (2+3)~~

The dynamics of aquatic systems, emphasizing community structure, energy flow, trophic relationships, and secondary and tertiary production. Applications to fish and invertebrate fisheries management. (Prerequisites: Geol. 411 or W.M. 423, and W.M. 429. Offered in alternate years; next offered 1972.)

