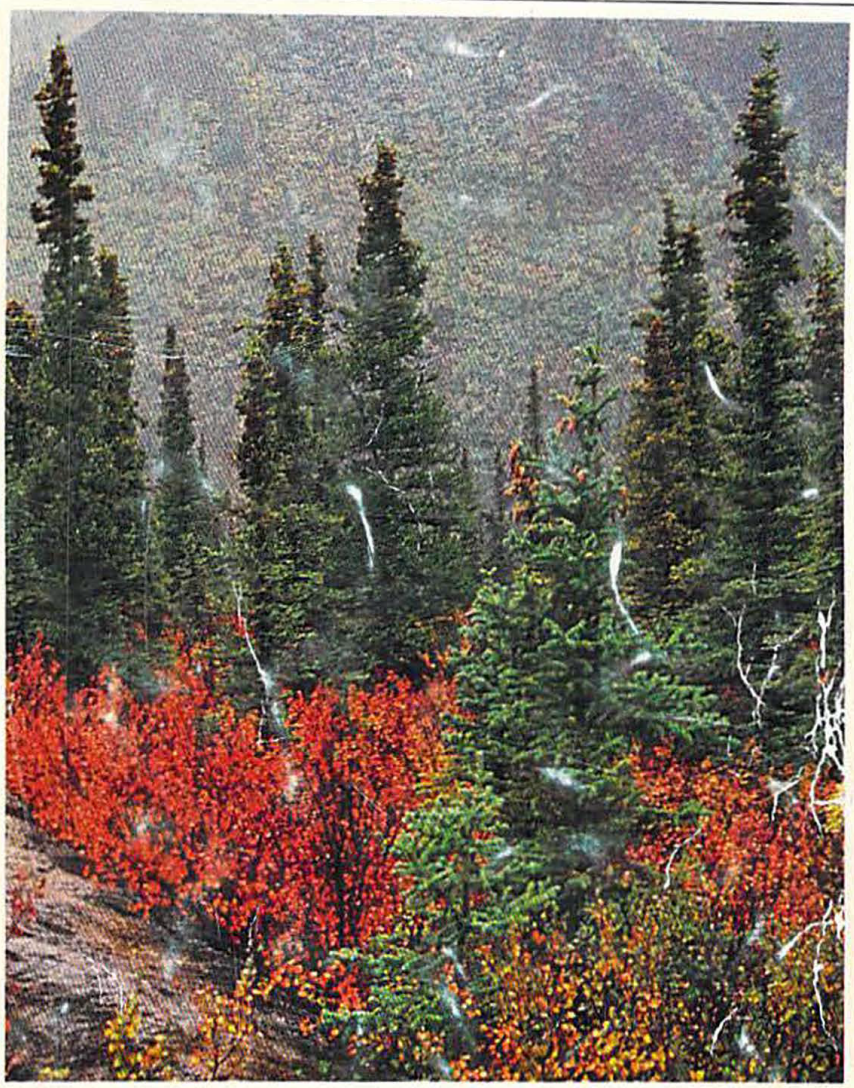
UNIVERSITY OF ALASKA FAIRBANKS



CATALOG

1989 - 90

1989-90
Catalog

University of Alaska Fairbanks

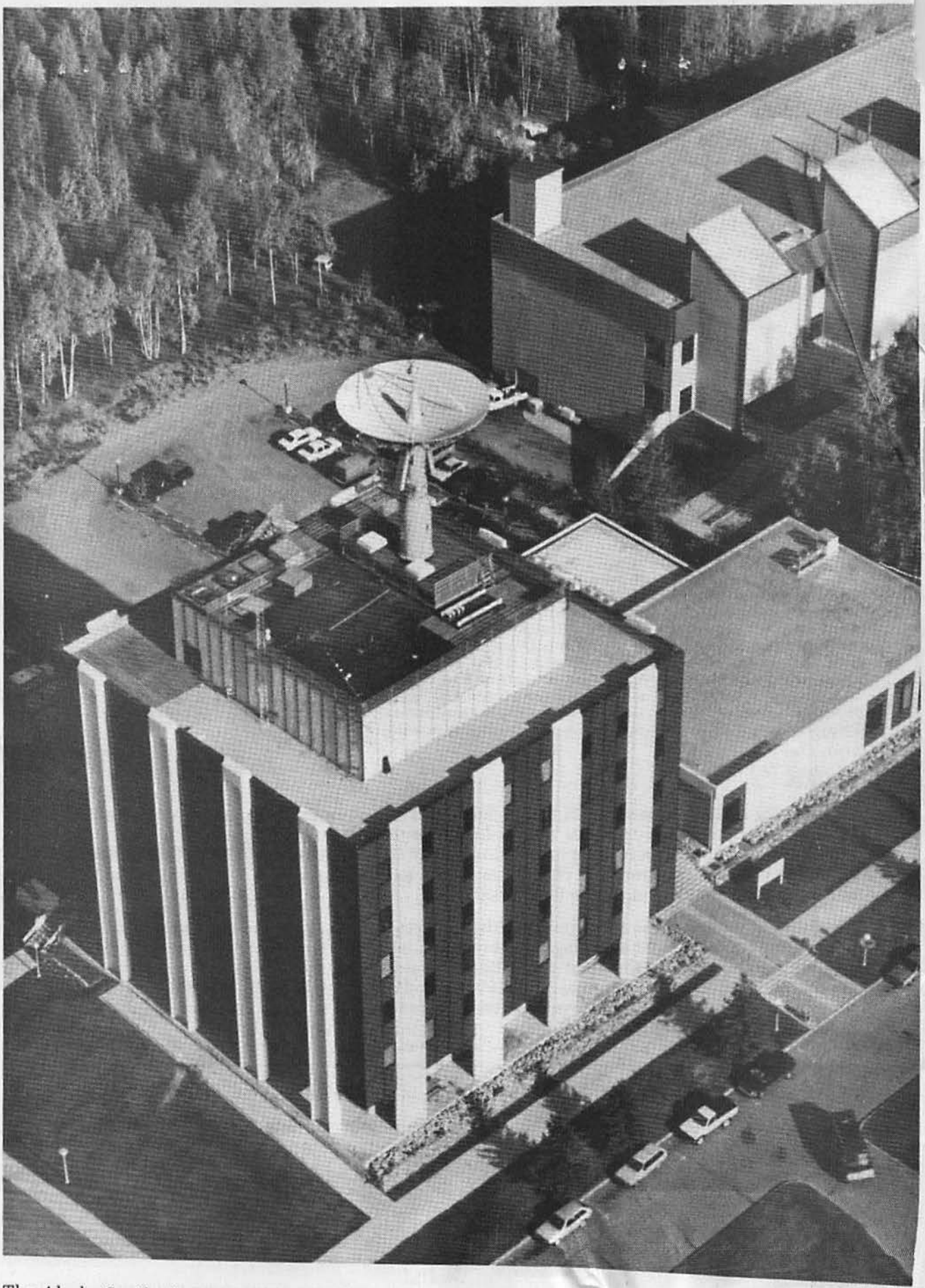
The University of Alaska Fairbanks is a major unit of the University of Alaska Statewide System of higher education. Under the direction of the Board of Regents, the University of Alaska System serves the people of America's largest state through facilities located throughout the state. Information about the programs of each unit in the system may be obtained from that unit.

It is the policy of the University of Alaska Fairbanks to provide equal education and employment opportunities and to provide services and benefits to all students and employees without regard to race, color, religion, national origin, sex, age, disability, status as a Vietnam era or disabled veteran, marital status, changes in marital status, pregnancy or parenthood, pursuant to laws enforced by the Department of Education and the Department of Labor, including Presidential Executive Order 11246, as amended, Title VI and Title VII of the 1964 Civil Rights Act, Title IX of the Education Amendments of 1972, the Public Health Service Act of 1971, the Veteran's Readjustment Assistance Act of 1974, the Vocational Rehabilitation Act of 1973, the Age Discrimination in Employment Act of 1967, the Equal Pay Act of 1963, the 14th Amendment, EEOC's Sex Discrimination Guidelines, and Alaska Statutes 18.80.010 et. seq., and 14.18.010, et. seq., and 36.30.010, et. seq. Inquiries regarding application of these and other regulations should be directed either to the University of Alaska Fairbanks, Director of Employee Relations; the Office of Civil Rights, Department of Education, Washington, DC; or to the Office of Federal Contract Compliance Programs, Department of Labor, Washington, DC.

NOTICE

This catalog and its contents shall not be construed as a contract between the University of Alaska Fairbanks and prospective or enrolled students. The catalog is merely a vehicle of information. Although every effort is made to ensure its correctness, regulations of the university and its program requirements change from time to time during the period any student is attending the University of Alaska Fairbanks.

Accordingly, if regulations or program requirements of the university in any way conflict with information contained in this catalog, the current regulations and program requirements govern. The university reserves the right to initiate changes in any of its regulations or program requirements affecting operation of the university and its program requirements; such changes shall become effective upon whatever time periods are required by applicable statutes, university regulations or program requirements.



The Alaska Synthetic Aperture Radar Facility antenna is located atop the C.T. Elvey Building on the main *campus.*

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Sources of Information

Admissions and Records (907) 474-7821
Advising Center (907) 474-6396
Alaska Teacher Placement (907) 474-6644
Alumni Association (907) 474-7081
ASUAF (907) 474-7355
Career Planning and Placement (907) 474-7596
Chancellor's Office (907) 474-7112
Chukchi Campus Information (907) 442-3400
Conferences and Institutes (907) 474-7800
Cooperative Extension Service (907) 474-7246
Correspondence Study (907) 474-5353
Downtown Center (907) 451-7223
Elderhostel (907) 474-5359
Fairbanks Campus Information (907) 474-7211
Fees (907) 474-7551
Financial Aid (907) 474-7256
Graduate School (907) 474-7464
Health and Counseling Center (907) 474-7043
Honors Program (907) 474-6612
Housing (907) 474-7247
International Programs (907) 474-5327
International Student Adviser (907) 474-7317
Kuskokwim Campus Information (907) 543-4500
Library, Rasmuson (907) 474-7224
Northwest Campus Information (907) 443-2201
Rural Student Services (907) 474-7872
Student Activities (907) 474-7037
Student Advising (907) 474-7317
Student Affairs (907) 474-7317
Summer Sessions (907) 474-7021
Testing Services (907) 474-5277
University Relations (907) 474-7581
Veterans' Information (907) 474-7521
Wood Center (907) 474-7037

The address for all Fairbanks campus departments is:
University of Alaska Fairbanks
Fairbanks, Alaska 99775

Academic Calendars — Fairbanks Campus

1989 Summer Sessions

May 30-Aug. 18

1989 Fall Semester

Labor Day	Mon., Sept. 4
Early Orientation for New Students (EONS)	Tue.-Wed., Sept. 5-6
Registration materials and advisers available	Tue.-Wed., Sept. 5-6
Residence halls open	9 a.m., Wed., Sept. 6
Registration: course selection	Thurs.-Fri., Sept. 7-8
Registration: fee payment	Mon.-Fri., Sept. 11-15
First day of instruction	Mon., Sept. 11
Last day of late registration	Fri., Sept. 15
Last day to apply for fall graduation	Mon., Oct. 16
Mid-term grades for freshmen	Oct. 18-Nov. 1
Last day for student-initiated withdrawals	Tue., Nov. 7
Thanksgiving holiday	Thurs.-Sun., Nov. 23-26
Last day of instruction	Tue., Dec. 12
Final examinations	Wed.-Sat., Dec. 13-16
Residence halls close	Noon, Sun., Dec. 17
Grades due to Admissions and Records from faculty	Noon, Wed., Dec. 20

1990 Spring Semester

Residence halls open	9 a.m., Sun., Jan. 14
Early Orientation for New Students (EONS)	Mon.-Tues., Jan. 15-16
Registration materials & advisers available	Mon., Jan. 15
Registration: course selection	Tues.-Wed., Jan. 16-17
Registration: fee payment	Thurs.-Wed., Jan. 18-24
First day of instruction	Thurs., Jan. 18
Last day of late registration	Wed., Jan. 24
Last day to apply for spring graduation	Thurs., Feb. 15
Mid-term grades for freshmen	Feb. 26-Mar. 9
Spring recess	Mon.-Sun., Mar. 12-18
Last day for student-initiated withdrawals	Fri., Mar. 23
All Campus Day (no classes)	Fri., Apr. 20
Last Day of Instruction	Fri., Apr. 27
Final examinations	Mon.-Thurs., Apr. 30-May 3
Residence halls close	Noon, Fri., May 4
Commencement	Sun., May 6
Grades due to Admissions and Records from faculty	Noon, Wed., May 9

1989

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1990

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1990

1990 Summer Sessions

May 29-Aug. 17

May

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1990 Fall Semester

Labor Day	Mon., Sept. 3
Early Orientation for New Students (EONS)	Tues.-Wed., Sept. 4-5
Registration materials & advisers available	Tues.-Wed., Sept. 4-5
Registration: course selection	Thurs.-Fri., Sept. 6-7
Registration: fee payment	Mon.-Fri., Sept. 10-14
First day of instruction	Mon., Sept. 10
Last day of late Registration	Fri., Sept. 14
Last day to apply for fall graduation	Mon., Oct. 15
Mid-term grades for freshmen	Oct. 17-31
Last day for student-initiated withdrawals	Tue., Nov. 6
Thanksgiving holidays	Thurs.-Sun., Nov. 22-25
Last day of instruction	Tue., Dec. 11
Final examinations	Wed.-Sat., Dec. 12-15
Grades due to Admissions and Records from faculty	3 p.m., Wed., Dec. 19

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1991

1991 Spring Semester

Early Orientation for New Students (EONS)	Mon.-Tues., Jan. 14-15
Registration materials and advisers available	Mon., Jan. 14
Registration: course selection	Wed., Jan. 16
Registration: fee payment	Thurs.-Wed., Jan. 17-23
First day of instruction	Thurs., Jan. 17
Last day of late registration	Wed., Jan. 23
Last day to apply for spring graduation	Fri., Feb. 15
Mid-term grades for freshmen	Feb. 25-Mar. 9
Spring recess	Mon.-Sun., Mar. 11-17
Last day for student-initiated withdrawals	Fri., Mar. 22
All Campus Day (no classes)	Fri., Apr. 19
Last day of instruction	Fri., Apr. 26
Final examinations	Mon.-Thurs., Apr. 29-May 2
Commencement	Sun., May 5
Grades due to Admissions and Records from faculty	3 p.m., Wed., May 8

(Note: All dates are subject to change.)

January

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Academic Calendars — Branch Campuses

1989-90

Chukchi Campus
1989 Fall Semester

Registration ..... Mon.-Fri., Aug. 28-Sept. 8
First day of classes ..... Mon., Sept. 11
Last day to apply for fall graduation ..... Mon., Oct. 16
Last day for student-initiated withdrawals ..... Tues., Nov. 7
(semester length classes only)
Thanksgiving holidays ..... Thurs.-Sun., Nov. 23-26
Last day of instruction ..... Fri., Dec. 22
Grades due to Admissions and Records
from faculty ..... Fri., Jan. 5

1990 Spring Semester

Registration ..... Mon.-Fri., Jan. 8-19
First day of classes ..... Mon., Jan. 22
Last day to apply for spring graduation ..... Thurs., Feb. 15
Spring recess ..... Fri.-Sun., Mar. 16-18
Last day for student-initiated withdrawals ..... Fri., Mar. 23
Last day of instruction ..... Fri., May 4
Commencement ..... Thurs., May 10

1989

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1990

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Kuskokwim Campus
1989 Fall Semester

Residence halls open ..... Mon., Sept. 4
Three-week session begins ..... Tues., Sept. 5
Last day of three-week session ..... Fri., Sept. 22
Registration for 12-week session ..... Thurs.-Sat., Sept. 21-23
First day of instruction for 12-week session ..... Mon., Sept. 25
Last day to add or drop classes ..... Fri., Sept. 29
Last day to apply for fall graduation ..... Mon., Oct. 16
Last day for student-initiated withdrawals ..... Fri., Nov. 10
Thanksgiving holidays ..... Thurs.-Fri., Nov. 23-24
Last day of instruction ..... Fri., Dec. 15
Final examinations ..... Mon.-Fri., Dec. 11-15
Grades due from faculty ..... Tue., Dec. 19

1989

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1990 Spring Semester

Residence halls open ..... Fri., Jan. 12
Registration ..... Thurs.-Sat., Jan. 11-13
First day of instruction ..... Tue., Jan. 16
Last day to add or drop classes ..... Mon., Jan. 22
Last day to apply for spring graduation ..... Thurs., Feb. 15
Last day for student-initiated withdrawals ..... Tue., Mar. 20
Spring recess ..... Fri., Mar. 16
Last day of instruction ..... Wed., Apr. 25
Final examinations ..... Mon.-Wed., Apr. 23-25
Commencement ..... Fri., Apr. 27
Grades due from faculty ..... Sun., Apr. 29

1990

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Northwest Campus
1989 Fall Semester

Registration ..... Mon.-Fri., Aug. 28-Sept. 8
First day of classes ..... Mon., Sept. 11
Last day to apply for fall graduation ..... Mon., Oct. 16
Last day for student-initiated withdrawals ..... Tues., Nov. 7
(semester length classes only)
Thanksgiving holidays ..... Thurs.-Sun., Nov. 23-26
Last day of instruction ..... Fri., Dec. 22
Grades due to Admissions and Records
from faculty ..... Fri., Jan. 5

1989

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1990 Spring Semester

Registration ..... Mon.-Fri., Jan. 8-19
First day of classes ..... Mon., Jan. 22
Last day to apply for spring graduation ..... Thurs., Feb. 15
Spring recess ..... Fri.-Sun., Mar. 16-18
Last day for student-initiated withdrawals ..... Fri., Mar. 23
Last day of instruction ..... Fri., May 4
Commencement ..... Thurs., May 10

(Note: Dates are subject to change.)

1990

January

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April

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May

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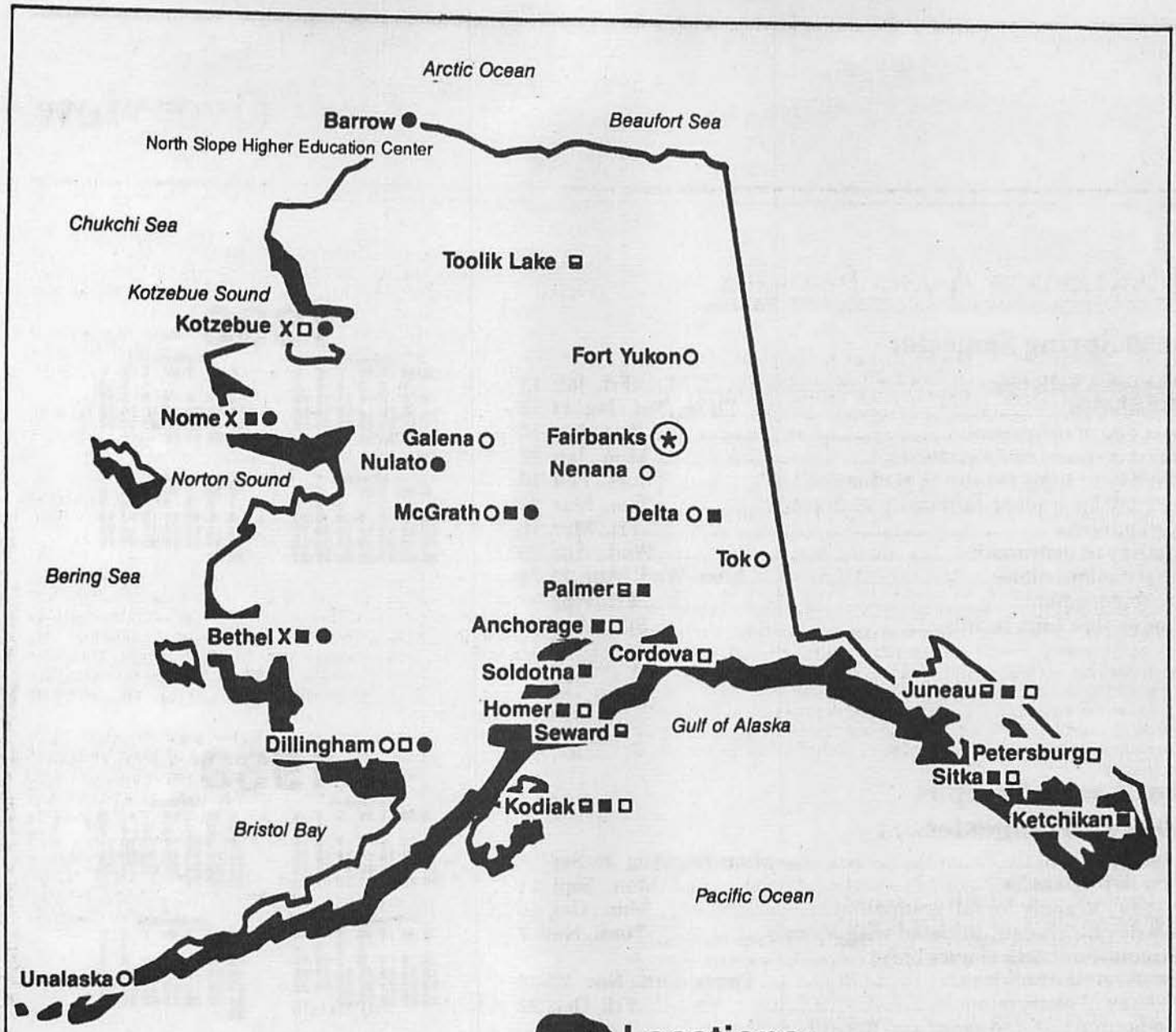


Locations:

- University of Alaska Fairbanks main campus
- X Branch campuses
- O Rural education centers
- Research centers
- ■ Cooperative Extension Service
- □ Marine Advisory Program
- ● XCED Cross-Cultural Education Development program

UNIVERSITY OF ALASKA FAIRBANKS

Overview

University of Alaska Fairbanks

The University of Alaska Fairbanks is the state's foremost center of higher learning. The Fairbanks campus was established as a land-grant college in 1917, named the Alaska Agricultural College and School of Mines. In 1980, the federal government named the university a sea-grant college as well. A restructuring in 1987 expanded UAF's instructional, research and public service programs throughout Alaska.

In addition to the main campus in Fairbanks, UAF has branch campuses in Bethel, Dillingham, Kotzebue and Nome, and education centers in downtown Fairbanks, Fort Yukon, Galena, McGrath, Nenana, Tok and the Aleutian Islands.

UAF serves students from all over the state, the nation and 25 foreign countries. UAF offers certificate, associate, baccalaureate and master's degree programs in the arts, sciences and professions, and master's degree programs in the arts, sciences and professions, as well as selected doctoral programs in areas of particular strength. Enrollment at UAF for the fall 1988 semester was 7,355.

Three colleges and six schools offer degrees in more than 70 fields of study with a host of options in many of the degree programs, as well as a wide range of technical and vocational programs.

Main Campus in Fairbanks

Instruction at the Fairbanks campus began in 1922. Since then, facilities on the Fairbanks campus have expanded greatly. Academic programs have increased in number and scope to keep pace with this continuing growth.

The Fairbanks campus is the state's primary residential institution and is the location of the seat of the state university system administration. On the 2,250-acre campus are two lakes, 35 miles of ski trails, and an arboretum. Recreational opportunities include an active intramural sports program, an eight-lane bowling alley, a pub and a wide variety of student clubs and organizations. UAF fields intercollegiate athletic teams in a number of sports.

The Fairbanks campus is also the university's principal research center, with a number of internationally respected units.

The Geophysical Institute was established in 1946 by an act of Congress. GI has since earned an international reputation for its studies of the earth and the physical environment at high latitudes. The Institute of Marine Science was established in 1960 by the Alaska Legislature. Its offices are on the main campus, with its principal shore facility in Seward. Three years later, the Alaska Legislature created the Institute of Arctic Biology. IAB manages the Large Animal Research Station just north of campus, the home of musk oxen, caribou and reindeer.

The first summer session was held at the university in 1947, symbolizing its growth into a year-round center for knowledge creation and dissemination. Ten years later the university joined the ranks of those institutions offering terminal degrees, when it awarded its first Ph.D.

The state of Alaska's constitution was written in what is now Constitution Hall on the UAF campus, and the document was signed in Signers' Hall, which currently houses the UAF central administration.

The Charles W. Davis Concert Hall and the theater are among the finest in the Pacific Northwest; the Rasmuson Library, in addition to its regular holdings, specializes in collections related to Alaska and the arctic regions. The University of Alaska Museum boasts a large collection of cataloged specimens of natural and cultural history materials from Alaska and the North.

UAF is a dynamic part of the Fairbanks community, located only four miles from the downtown business district. The university is easily accessible via the international airport, highway system, railroad and local borough bus system.

The Fairbanks area, with a population of more than 70,000, offers the conveniences of a big city, yet rolling hills and spectacular panoramas are only 20 minutes away.

UAF's **Downtown Center** in Fairbanks is headquarters for the School of Career and Continuing Education. Educational and training programs offered at the Downtown Center include accounting, business, computing, office professions, financial institution management and general developmental education. Three computer labs are available at the center and a comprehensive office professions lab. In addition to regularly scheduled courses, SCCE offers customized personnel training seminars to local businesses at this site. Also situated at this location is the Student Development and Learning Center. The task of the SDLC is to provide services to students and the public that contribute to a successful learning experience or career transition.

The **Hutchison Career Center**, located near the UAF Fairbanks campus on Geist Road, is the home of several school career programs. With more than 12,000 square feet of shop, classroom and office area, the space has been organized and equipped for skill development. The Culinary Arts Program is located here, providing a daily luncheon service in the center's cafeteria during the academic year. Vocational/technical programs found here include welding, aviation technology, drafting, mining technology, airframe and powerplant and diesel/heavy equipment mechanics. For further information call 474-5240.

Rural Alaska Campuses

Bristol Bay Campus in Dillingham

The Bristol Bay Campus serves 32 villages in an area of approximately 55,000 square miles, within boundaries which stretch south on the Alaska Peninsula as far as Ivanof Bay, north to Lake Clark and west to Togiak. The campus building is located in Dillingham, usually considered the hub of the region, 322 air miles from Anchorage and 570 air miles from Fairbanks.

The population of Bristol Bay exceeds 5,000 people, with more than 2,100 living in Dillingham. The ethnic groups represented in the region are primarily Yup'ik Eskimo, Aleut, Tanaina Athabaskan and Caucasian, with Yup'ik Eskimo comprising the largest percentage (40 percent) of the population.

For the past two years, the average semester enrollment in the Bristol Bay Campus has been approximately 200 students. The campus offers an associate of arts degree in general studies, and course work in support of the UAF bachelor of arts degree, as well as vocational courses and non-credit community education programs. In addition, the Bristol Bay Campus houses the UAF Marine Advisory Program which provides educational and technical assistance to the communities of Bristol Bay.

Courses are offered throughout the region through distance delivery, audioconference, correspondence, and itinerant instructors, as well as by the more traditional methods.

Chukchi Campus in Kotzebue

The Chukchi Campus is located in Kotzebue, Alaska, on the northwest shore of the Baldwin Peninsula, 30 miles above the Arctic Circle. It serves a region of northwest Alaska of more than 36,000 square miles which is about the size of the state of Indiana. This area lies almost totally north of the Arctic Circle. The population of the region is approximately 6,000, 88 percent of whom are Inupiaq Eskimo. This population is distributed throughout 11 villages which range in size from approximately 70 people in Kobuk to 3,000 in Kotzebue, the transportation-communication hub of the region. The 11 villages are not connected by road, nor is the region connected to the rest of the state by any road system. Transportation to and from the villages is limited to light aircraft, snow machines in winter and boats during the brief periods of open water.

With its special emphasis on the academic program in support of the associate of arts degree, Chukchi offers about 28 academic, lower division courses in each of two semesters—September through May. Because of the geographic isolation, transportation and population limitations of the region which Chukchi serves, this branch has developed and implemented a comprehensive field-delivered A.A. degree program. Courses are delivered to students in their home villages through extensive use of audioconferencing, Student Instructional Meetings, computer-assisted instruction and instructor travel to villages. Additionally, Chukchi uses comprehensive course outlines/syllabi, telephone, television and video and audio tapes, and the personal contact of the Village Academic Coordinators to facilitate delivery of its total program.

Kuskokwim Campus in Bethel

The Kuskokwim Campus can most accurately be described as a regional center serving an extended community.

The majority of the 19,000 residents of the Yukon-Kuskokwim Delta are Yup'ik Eskimos who live in villages of 200 to 500 people. The city of Bethel, located 80 miles inland on the Kuskokwim River, is a community of approximately 4,000 and serves as the headquarters of the campus. Bethel is also the transportation and service center of the region.

In many villages the primary language of the people continues to be Yup'ik, and the residents proudly retain their traditional cultural values. Many college students within the region seek ways of blending this inherited wisdom with a knowledge of today's western technology in the interest of creating a modern Yup'ik world.

Housing is available on Kuskokwim Campus in Sackett Hall, which provides full-service student apartments with living space for four students in each.

The Kuskokwim Campus offers an associate of arts degree, and associate of applied science degrees in community health and early childhood education. Many of KUC's courses are offered to students in villages via audioconference.

KUC offers programs and courses throughout the Yukon Kuskokwim Delta.

Northwest Campus in Nome

Northwest Campus serves not only the residents of Nome, where it is located, but also the people in the 15 regional Eskimo villages surrounding Nome. Six of these villages (Gambell, Savoonga, Unalakleet, Stebbins, Shishmaref and Koyuk) have village-owned adult learning centers. Nome's population is under 4,000 while the region's total is about 7,500. Through the cross-regional deliverance of audio conferenced courses, NWC also provides classes to students at the rest of the Rural College campuses and rural sites.

Northwest offers a general program of the first two years of a college curriculum, including courses leading to the associate of arts and associate of applied science degrees. A number of vocational and general interest courses are also taught. A new mining curriculum has been popular in Nome. The three four-year programs offered through the Rural College can also be taken directly through NWC.

Northwest is small, with the majority of students attending on a part-time basis. Class sizes range from six to 20 students so personal attention is optimum. Many of the courses taught are individualized, or self-paced. A sophisticated telecommunications system allows most courses to go to communities outside of Nome. Workshops are held in Nome which stress "hands-on" experience. The programs and courses offered are focused both on the career development and personal growth of the permanent residents of western Alaska and the needs of the communities themselves.

Education Centers

The **Aleutian Center** serves the villages of Cold Bay, King Cove, Pribilofs, Sand Point and Unalaska. These communities share the characteristics of a relatively temperate climate, marked rainfall, mixed Aleut-Scandinavian-Russian heritage and, with the exception of Cold Bay, an economy based on fishing. The population of these communities is approximately 5,000 people, which can easily double during the summer fishing season. The center offers a variety of courses each semester and augments its local course offerings with courses delivered through teleconferencing. This enables the smallest village to have access to experts from many disciplines and to meet with students from other parts of the state in a statewide classroom.

The **Delta Learning Center** is located one-quarter mile off the main highway across the street from the high school in Delta, approximately 100 miles from Fairbanks. The Delta Greely Learning Center is responsible for instructional facilities and activities in the greater Delta Junction area. Professional staff focus on the specific needs of the community and those of surrounding subregions. For more information call 895-4292.

The **Fort Yukon Center** serves the Upper Yukon Valley from Circle in the south and Chalkyitsik in the east, north to Arctic Village in the beginnings of the Brooks Range and downriver to Rampart in the west. The region covers about 53,000 square miles and has a population of 2,000 people who are predominantly Gwich'in Athabaskan. Except for Circle, which is accessible by road, the villages of the region rely on air and extensive water systems for transportation. Each semester, in addition to a slate of courses in all the discipline categories needed to meet A.A. degree requirements, the center seeks to provide educational and vocational opportunities which reflect a culture that relies heavily upon subsistence activities. The courses offered are varied and determined by the requests of the community members.

The **Galena Center** serves a network of Koyukon Athabaskan villages in interior Alaska along the Yukon and Koyukuk rivers. Although Galena has an air force base and is a center for several service agencies, the region's overall population of about 4,500 people depends substantially upon a subsistence economy. Since no roads link this area, transportation is by small aircraft, riverboat and snow machine. Over the past 10 years, the region's greatest educational strength has been its support of the XCED field-based teacher education program. As a result of this program's success, the region boasts the state's highest percentage of Native teachers within its local school systems. Along with this commitment to education the Galena Center has also maintained a strong program of vocational courses tailored to community needs.

The **McGrath Center** serves an area the size of Ohio, including the communities of McGrath, Nikolai, Medfra, Telida and Takotna on the Upper Kuskokwim River and Shageluk, Grayling, Anvik and Holy Cross on the Yukon River. It is the aim of the center to assist area residents in meeting their educational goals. For some, this means improving or gaining job-related skills such as typing, accounting or programming a microcomputer. Others are interested in working toward a college degree or want to develop a personal interest such as art or philosophy.

The **Moose Creek Center** is located just east of the city of North Pole and about a mile and a half from the entrance to Eielson Air Force Base. The Moose Creek Center is used extensively by residents of the greater North Pole area and active

duty military personnel and their families. A selection of general education, business, computer and office professions courses are offered at the center. The center also houses an office professions lab including the office equipment needed to complete office professions courses and enhance office support staff skills. For more information call 488-4421.

The **Nenana Center** encompasses 100 miles along the Parks Highway and the two small villages of Manley Hot Springs and Minto. The communities along the highway are Nenana, Clear Air Force Base, Anderson, Healy, Cantwell and Denali Park. This widely diverse area includes an equally diverse array of people. Classes through the center are held in many different locations. The region encompasses three school districts, all of which cooperate in the use of their buildings and audio/video equipment. The courses are offered in a variety of ways: lecture, correspondence, combination of lecture/correspondence with a visiting professor, multi-media, independent study, small group instruction or module method with the instructor used as a resource person. All students in the region now have easy access to courses which are offered on a sequential basis leading to the fulfillment of the general education requirements for an associate of arts degree. The center serves as an educational information center which helps deliver the needed answers to problems and plan education and professional programs.

The **Tok Center** serves Tok, Northway, Totlin, Tanacross and Dot Lake along the Alaska Highway system, and Eagle, accessible via the Taylor Highway from May through September. Approximately 2,500 people reside in the 30,000-square-mile service area in small towns, Native villages or widely scattered homesites. The population consists of Caucasians, minorities and Athabaskan Indians. The center is located in Tok, the major commercial center for travelers entering Alaska on the Alcan Highway. Responsiveness to local needs is a determining factor shaping the Tok Center program and the center offers a wide variety of courses to meet the diverse needs of its clientele. Course offerings have included business and computer science, education, basic vocational/industrial skills, paraprofessional counseling, private pilot training, office skills, art and general education, and degree requirements.

Military Education Centers

UAF's military education centers provide programs of continuing education for armed forces personnel at Eielson and Galena Air Force bases, and Fort Wainwright and Fort Greely Army posts. Interested dependents and other civilians, in addition to active duty military personnel, are welcome to participate in the programs. Offices are maintained at both Eielson and Fort Wainwright to advise, counsel and register students, as well as to offer support to students, faculty, staff and the military community. For more information call Fort Wainwright at 353-6431 or Eielson at 377-1396.

Special Mission

The University of Alaska Fairbanks was established in 1917 as the Alaska Agricultural College and School of Mines. Today, as a comprehensive land grant and sea grant university, the multi-campus University of Alaska Fairbanks exists as a vital state resource to teach, to inquire and to serve.

The University of Alaska Fairbanks offers instructional programs covering a broad postsecondary spectrum and is the major research center for Alaska. The University is committed to providing a free and open forum where ideas and issues may be professionally pursued and frankly debated in an environment of mutual respect and intellectual integrity. It seeks to provide an intellectually stimulating learning process which is culturally sensitive and empowering to its students. The university is committed to assuring that its graduates receive a balanced education in the arts, humanities, natural and social sciences through which creativity is fostered and historical and philosophic perspectives are gained. As a result, the state benefits from an educated citizenry capable of the independent pursuit of further learning, of contributing to the economic well being of the state and nation and of participating in and contributing to global society. The university seeks a culturally diverse environment that values and promotes equal treatment of sexes, races, cultural and ethnic groups throughout its academic programs, student body, faculty and staff.

The University of Alaska Fairbanks as a residential institution of higher education serves students from all of Alaska as well as from other states and nations. It is particularly committed to enhancing educational opportunities for Alaska's rural and native populations. Through its branch campuses in Bethel, Kotzebue and Nome and its rural education centers, the university is responsive to local and regional needs, including open educational access to its programs. Special strengths exist in the use of educational technology which provide for the distance delivery of selected programs to many areas of the state. In seeking to serve a broad array of students, admission to several associate degree and certificate programs is open to all. Admission requirements to all baccalaureate and graduate programs as well as some Associate of Applied Science degree programs vary depending on the specific field of study.

The University of Alaska Fairbanks offers developmental programs and certificate, associate, baccalaureate and graduate/professional programs in the arts, sciences, career fields and professions. It is a center for graduate education and is currently Alaska's only doctoral granting institution. It possesses unique strengths in the physical and natural sciences and offers a broad array of engineering programs with a particular emphasis on the stresses of northern environments. UAF is a major center for the study of natural resources including minerals, forestry, wildlife, geology, agriculture, fisheries* and ocean sciences and their associated economics. It has been recognized for its work in multi-cultural understanding, rural health problems, and cross cultural interaction in the human service professions.

As a major center for research and scholarship, the University of Alaska Fairbanks is committed to the mutual enhancement of teaching and research and creative activity, and public service. Scholarship which produces new knowledge instills a vigor into teaching which in turn stimulates inquiry and the quest for further answers to the unknown. The university seeks to use its particular location in the north as a natural laboratory for the study of questions and issues, whose solutions are not only applicable to Alaskan problems but to a broader understanding of our global community. As part of a network of state research universities, this institution has an active program of basic and applied research resulting in a well earned national and international reputation. Specific recognition has been achieved in space physics, marine science, and high latitude biology, environmental sciences, engineering and geophysics. The University has recognized programs in definition, exploration, development and management of Alaska's renewable and non-renewable resources. It is the state's center for study of Alaskan native cultures and languages.

Through its Cooperative Extension Service and Marine Advisory Programs, research results are interpreted and transferred to people of the state. Its continuing education programs extend the expertise of the university to adult learners needing alternative learning opportunities. The university's library and museum provide the state's major information resources and cultural collections with a particular strength in Alaska and polar regions. Finally, through its programs in fine and performing arts, the university provides cultural enrichment to the state's interior and rural populations. In accomplishing this mission, the university seeks the advice and guidance of Alaska's residents and friends.

* *Juneau fisheries students should also reference the University of Alaska Southeast catalog.*

Accreditation/Memberships

UAF is accredited as an institution of higher learning by the Commission on Colleges of the Northwest Association of Schools and Colleges.

In addition, UAF has received for certain of its programs the accreditation extended by specialized national agencies, including the American Chemical Society, the Accreditation Board for Engineering and Technology, the American Association of Museums, the Accrediting Council on Education in Journalism and Mass Communication, the National Association of Schools of Music, the National Council for Accreditation of Teacher Education, the American Assembly of Collegiate Schools of Business, the Alaska State Board of Education in accordance with standards set by the National Association of State Directors of Teacher Education and Certification and the Council on Social Work Education.

UAF is affiliated with the National Association of State Universities and Land-Grant Colleges and holds institutional membership in the American Council on Education, the American Association of State Colleges and Universities, the Council of Graduate Schools in the United States, the Western Association of Graduate Schools and the Western Interstate Commission for Higher Education.

In addition, UAF holds official designation as both a land-grant and sea-grant institution. In 1917, the federal government gave land-grant status to the university, and in 1980 sea-grant status was added.

Governance

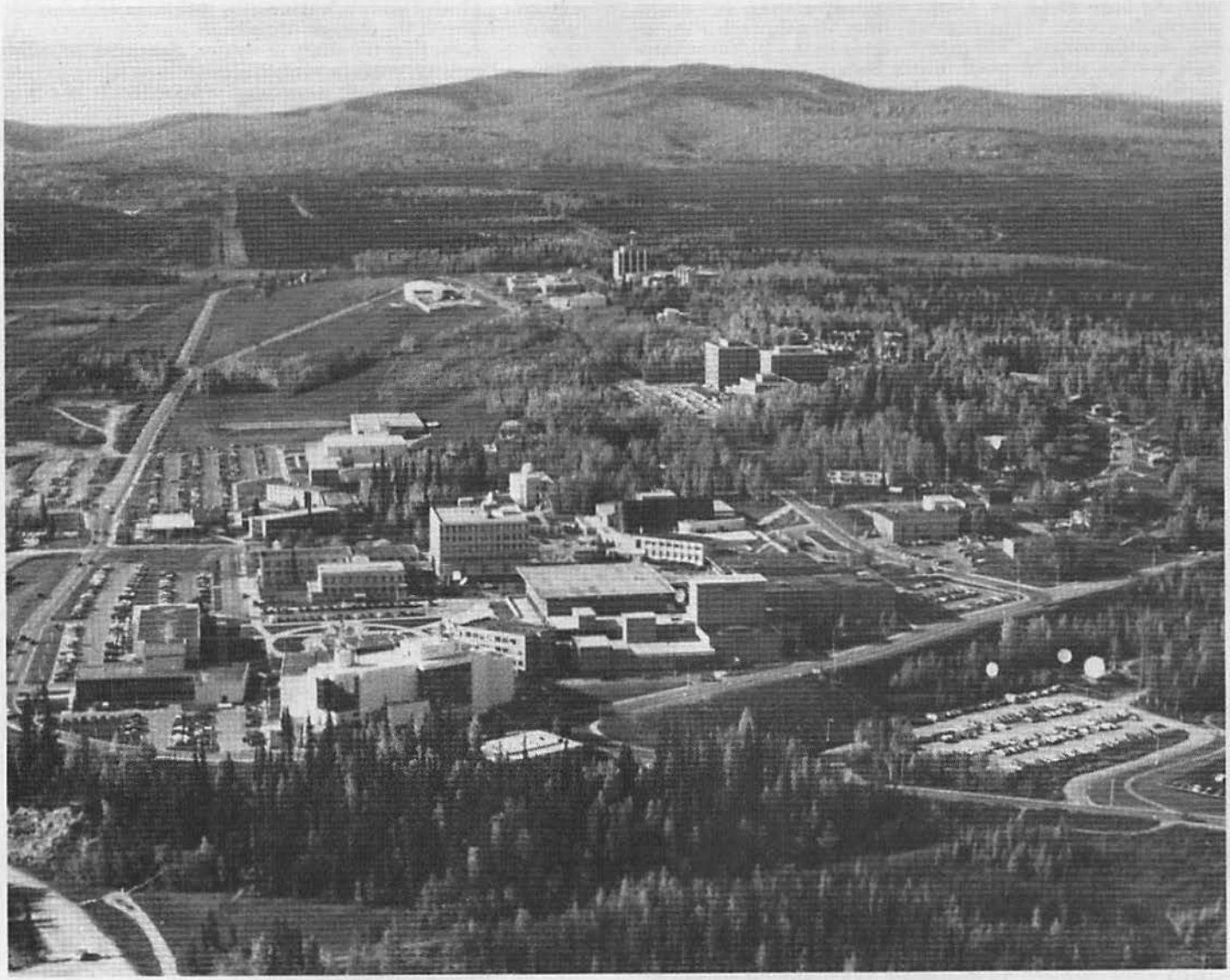
Students (ASUAF), faculty (Faculty Senate) and staff (Staff Council) are represented by individual governance structures which address their concerns. The UAF Assembly provides a forum for the three individual governance bodies to address common concerns.

The governance organizations function as legislative and consultative bodies having primary authority to initiate, develop and review policies pertinent to UAF.

ASUAF is responsible for those issues which are uniquely student affairs issues. The Faculty Senate is responsible for those issues which are uniquely faculty purview. The Staff Council is responsible for those issues which are uniquely staff affairs issues.

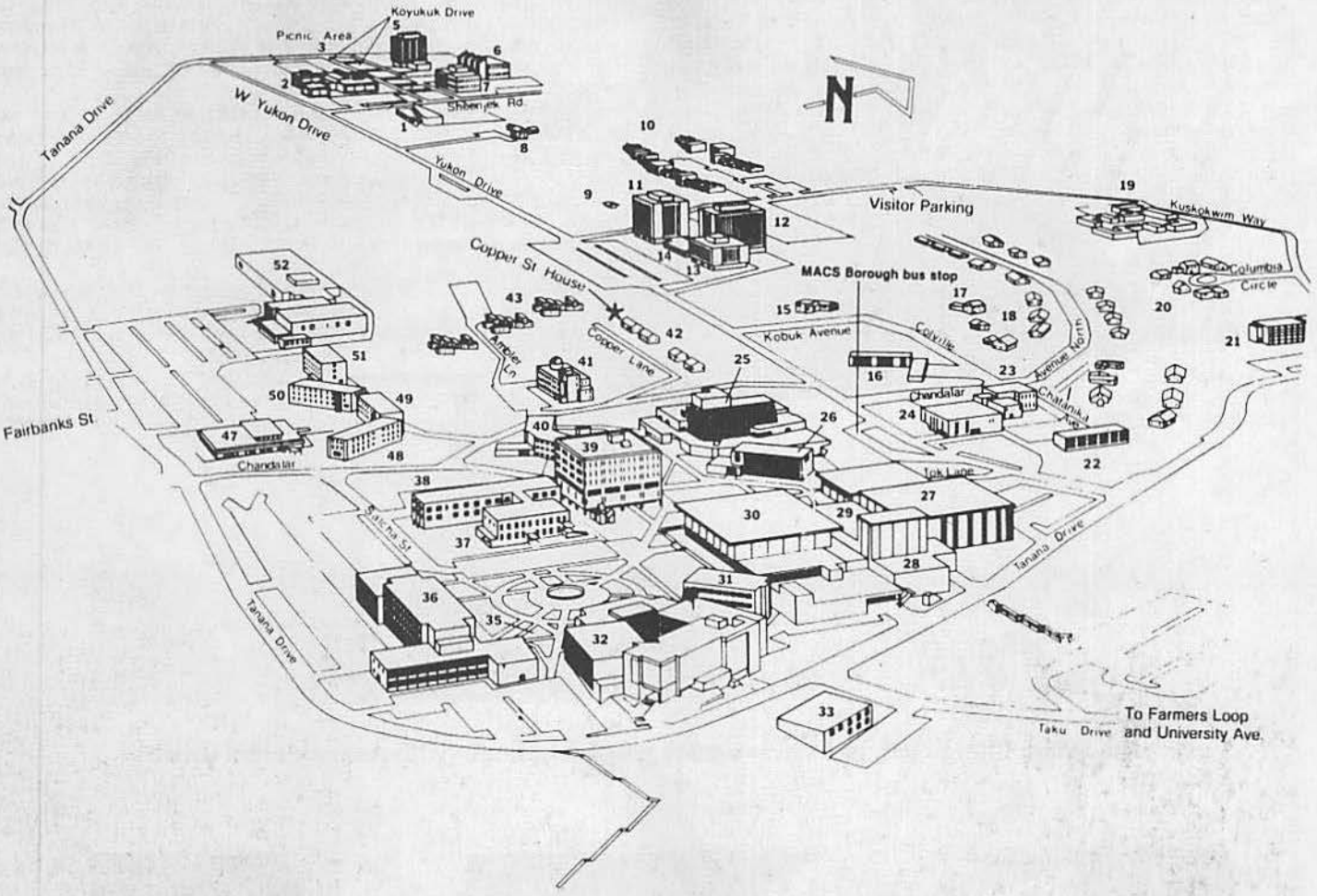
Actions by each governance body are forwarded for consideration to the chancellor's office which shares in the responsibility for campus governance. All governance activities are subject to the authority of Board of Regents policy.

ASUAF information can be obtained by calling 474-7355. All other governance information is coordinated through the UAF Governance Office in 312 Signers' Hall. The phone number is 474-7056 or 474-7964.



The UAF main campus encompasses some 2,200 acres and is situated on a hill overlooking the Tanana Valley in interior Alaska.

Fairbanks campus map



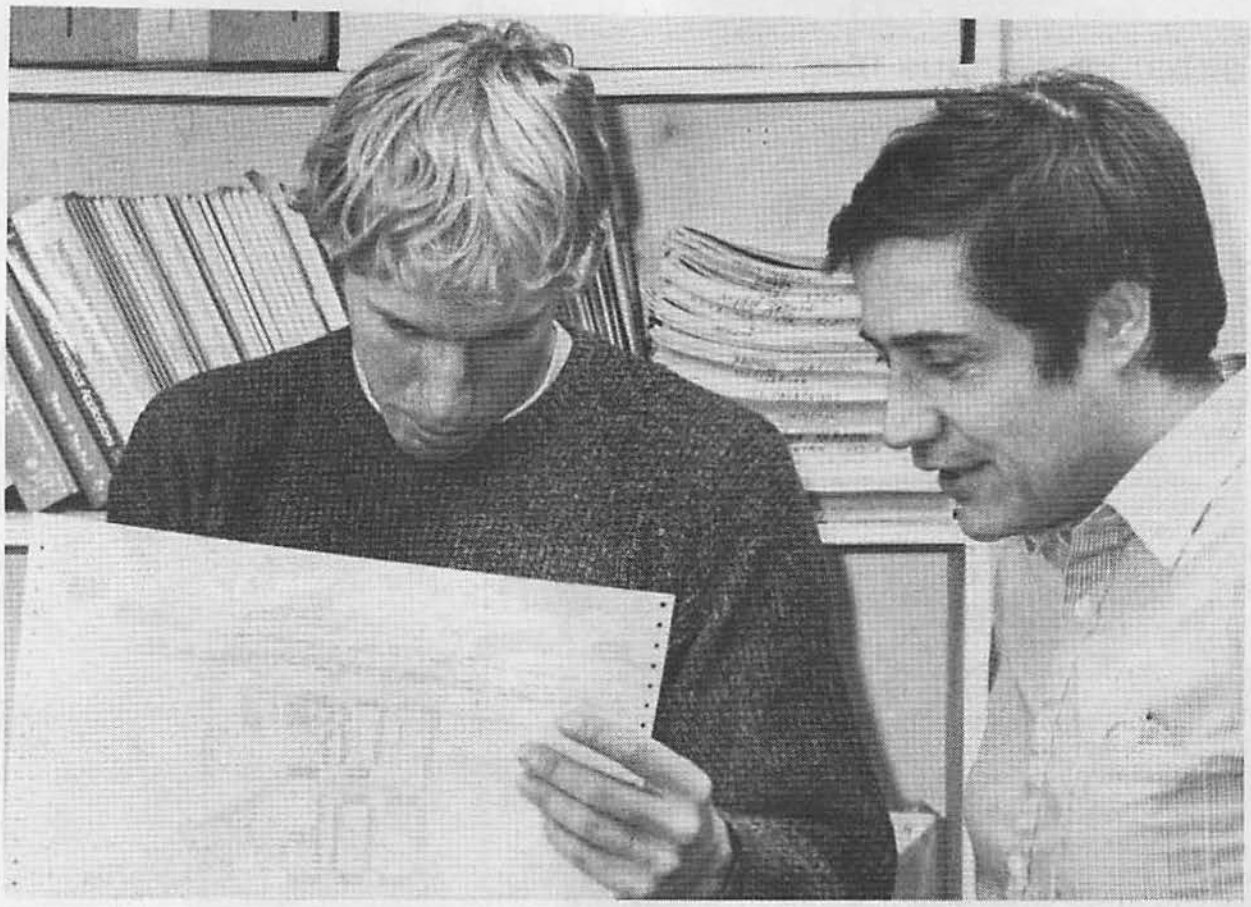
UNIVERSITY OF ALASKA FAIRBANKS

West Ridge

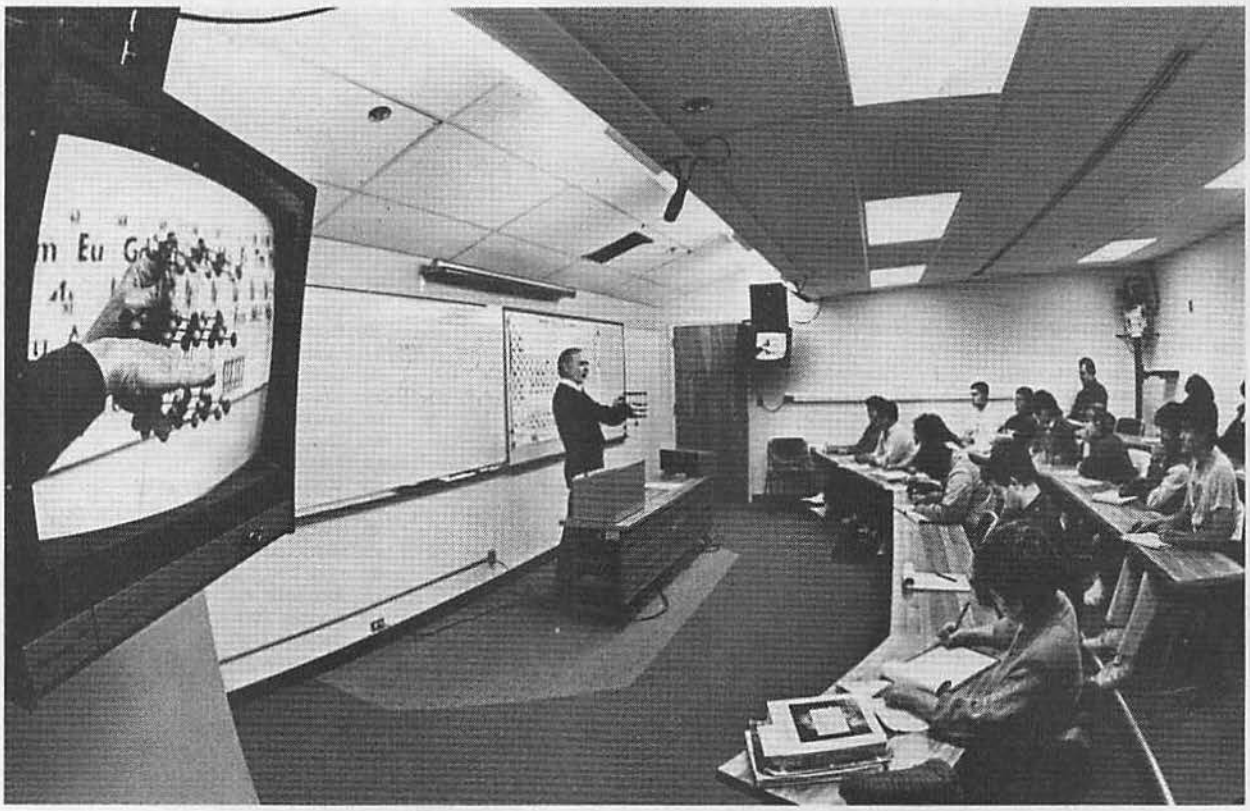
1. Otto Geist Building: University of Alaska Museum
2. Arctic Health Research Building
3. Picnic area
4. Boreal arboretum
5. Elvey Building
6. O'Neill Building
7. Irving Building
8. College Magnetic and Seismological Observatory

Main Campus

9. Rainey's Cabin
10. Residential complex
11. Moore Hall
12. Bartlett Hall
13. Skarland Hall
14. Hess Commons
15. President's residence
16. Stuart Hall
17. Chancellor's residence
18. Faculty housing
19. Hess Complex
20. Faculty housing--Garden Apartments
21. Harwood Hall
22. Walsh Hall
23. Fire station
24. Health, Safety and Security Building
25. Wood Center
26. Constitution Hall
27. Fine Arts Complex
28. Fine Arts Theater
29. Regents' Great Hall
30. Elmer E. Rasmuson Library
31. Brooks Building
32. Duckering Building
33. U.S. Forest Service Building
35. Cornerstone and Memorial Plaza
36. Bunnell Building
37. Signers' Hall
38. Eielson Building
39. Gruening Building
40. Wickersham Hall
41. Chapman Building
42. Faculty housing
43. Modular residence units
44. Services Building
45. Atkinson Building
46. Rural Laboratory School
47. Lola Tilly Commons
48. McIntosh Hall
49. Nerland Hall
50. Stevens Hall
51. Lathrop Hall
52. Patty Athletic Center



Student Raymond Billings, left, looks over a math program printout with Associate Professor Pat Lambert.



Associate Professor Don Lokken teaches a rural outreach chemistry class in the Duckering Building. Images are transmitted to rural sites for students who are not in Fairbanks.

Undergraduate Admissions

Applying for Admission

When to Apply

It is recommended that seniors in high school make application for admission during the first semester of their senior year if they plan to enroll at the university during the next fall semester. Transfer and graduate students should make application at least nine months prior to the beginning of the semester in which they plan to enroll at UAF. Applications for admission should be submitted not later than August 1 for the fall semester and December 1 for the spring semester. Applications received after these dates will be processed if time permits and space is available.

A person cannot make reservations for on-campus housing until his/her application for admission has been accepted. It is recommended that application for admission materials be filed at least six months prior to the date the applicant plans to enroll if he/she is interested in single student housing. For information about availability of married student housing, contact the UAF Housing Office.

How to Apply

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

1. Application for Admission — A $20 processing fee for a bachelor's degree or $10 for an associate degree or certificate must accompany the completed application for admission form.

2. Transcripts — An applicant who has never previously enrolled in any college or university must have an official high school transcript sent from the high school from which the applicant has graduated or will graduate to the Office of Admissions and Records. The transcript is not acceptable if submitted directly to the university by the applicant.

An applicant who has attended other colleges and/or universities is responsible for requesting official transcripts from *each* college or university attended be sent directly to the Office of Admissions and Records. *TRANSCRIPTS WILL NOT BE ACCEPTED IF SUBMITTED TO THE UNIVERSITY BY THE APPLICANT.*

A transfer applicant with less than 30 semester hours of credit is required to submit a high school transcript as well as college transcripts. Such an applicant should follow the instructions given above for having official transcripts from high school and other colleges and/or universities sent to the University of Alaska Fairbanks.

3. Test Results — All entering freshmen in bachelor's degree programs are required to submit results of either ACT or SAT examinations as part of their admissions credentials. Acceptance into UAF is not dependent upon a minimum test score; however, the university uses these test scores to determine placement for students in appropriate English, mathematics and other freshmen level courses. It is the responsibility of the applicant to have the test results sent to the Office of Admissions and Records where they will become part of the student's admissions credentials.

Results of the SAT, ACT or ASSET test which will be used for placement will be required for entry into all associate and certificate degree programs.

Students qualifying for entry into an associate or certificate program do not need to submit test results if they have transferred in 30 semester hours of credit which includes appropriate courses in English and mathematics.

Information concerning ACT or SAT testing centers or ASSET testing, test dates and obtaining test results may be obtained from most high schools or from the UAF Testing Office.

Conditional and Final Acceptance

After the required credentials are received, reviewed and processed, a statement of acceptance will be mailed to the qualified applicant. The statement of acceptance will contain the conditions under which the applicant has been admitted.

Qualified applicants can be accepted for admission while enrolled in their last year of high school or another college. However, the acceptance may be conditional upon receipt of an official transcript indicating satisfactory completion of the work in progress at the time of acceptance or, in the case of a high school senior, completion of graduation requirements.

Final acceptance to UAF for the purpose of earning scholastic credit becomes complete only when all credentials have been received and accepted by the Director of Admissions and Records.

Acceptance of a student for enrollment at the University of Alaska Fairbanks constitutes an agreement of mutual responsibility. The student agrees to abide by established rules and policies and to act in a responsible, mature manner. The university's part is to provide an appropriate academic atmosphere.

Immunization Policy

UAF requires the following to be supplied by all new students admitted for nine or more credits:

1. A completed health inventory form to be returned to, and kept on file with, the Center for Health and Counseling;
2. A report of negative tuberculin skin test or chest x-ray;
3. Written proof from a medical authority of immunity to:
   a. Rubeola (measles)
   b. Rubella
   c. Diphtheria and Tetanus
   d. Polio

Registration may be withheld for a student's second semester pending compliance with above.

Undergraduate Admission Requirements

Freshman

To qualify for admission as a freshman to the University of Alaska Fairbanks, a prospective student must meet one of the following:

A. For admission to associate degree programs, a student must have earned a high school diploma or the equivalent (GED) or have reached 18 years of age.

   Students in a certificate or associate degree program, who later may wish to enter a baccalaureate degree program, may be admitted upon satisfactory completion of 14 academic credits at the 100 level or above, of which nine credits must satisfy general baccalaureate degree requirements.

B. For admission to a baccalaureate degree program, a student must have graduated from high school with an overall grade point average (GPA) of 2.0 (C) or higher. Admission to specific baccalaureate degree programs will be based upon a combination of the high school grade point average and completion of specific high school courses.

In addition, the applicant must complete with a minimum grade point average of 2.00 (C) a core curriculum of at least 11 academic credits, including at least three credits in English, two in mathematics, two in social sciences, and two in natural or physical sciences (including at least one laboratory course if offered by the high school).

All entering freshmen are required to submit the results of either an ACT or SAT examination.

An applicant who meets the admission requirements stated above is eligible for admission to the University of Alaska Fairbanks as a freshman.

C. High school graduates who do not meet minimum high school entrance requirements for the baccalaureate degree may be granted provisional acceptance for a period not to exceed one calendar year from date of entry. Such students may be admitted later as unrestricted baccalaureate degree candidates provided they make up deficiencies by earning at least a "C" grade in each of the appropriate developmental or university courses determined through advising as necessary for their successful completion of a baccalaureate degree and complete nine credits of general baccalaureate degree requirements with a grade of "C" in each course.

D. Non-high school graduates, 21 years of age or older, who do not meet the above stated minimum entrance requirements may be accepted for unrestricted admission to the university on a case by case basis by completing either the ACT or SAT with scores which show the ability to successfully complete a baccalaureate degree program.

Effective September 1991—
Additional Requirements

Freshmen planning entry in September 1991 must have a cumulative GPA of 2.00 and a 2.50 average in a core curriculum consisting of at least 16 academic units. The units include four credits in English, three in college preparatory mathematics (selected from Algebra I, II, geometry, trigonometry, elementary functions, precalculus or calculus), three in social sciences and three in natural or physical sciences (including at least one laboratory course in biology, chemistry or physics). Two years of study in a non-English language is strongly recommended.

Transfer Students

Transfer applicants who have attended another accredited institution are eligible for admission provided they have a 2.0 (C) GPA in their previous college work and an honorable dismissal from the schools previously attended. Applicants desiring to enter a technical or scientific major may be required to present a higher grade average and evidence of completion of background courses before admission to those programs can be granted. Transfer students with fewer than 30 semester hours of transferable credit must also have a high school GPA of 2.0 (C) or higher and are required to complete the ACT or SAT prior to registration.

International Students

Additional admission requirements apply to international students and recent immigrants to the United States.

A. English Language Proficiency Policy: In addition to meeting regular admission requirements, foreign students must be able to read, write and speak English well enough to accomplish their programs successfully.

TOEFL Test Requirements

1. Applicants from countries where English is not the native language must present a satisfactory score on the Test of English as a Foreign Language (TOEFL). No other test can be used nor may any other proof of English competency be substituted (such as English credits from other schools).

2. A TOEFL score is required for permanent residents (immigrant visa) when all formal education of the applicant is from a country where English is not the primary language, or when the documents presented for admission do not clearly indicate the applicant's proficiency in English.

3. Applicants must present a TOEFL score of at least 550.

B. Other Requirements

1. When preparing the I-20 form that is necessary to obtain an F-1 (student) visa, the university must certify to the Immigration and Naturalization Service that the prospective student has been accepted for full-time enrollment and has sufficient funds to meet estimated expenses for one academic year. Foreign students on F-1 visas must maintain a full-time course load; they may not enroll as part-time students (less than 12 credits per semester).

2. Foreign students must sign a statement that sufficient funds are available to pay all expenses while attending UAF, as well as the amount needed for round trip transportation costs between the student's home and Alaska. The minimum cost for attending UAF for one school year is at least $5,500. This amount covers all university fees, room and board on campus, and a reasonable amount of personal expenses including transportation. It does not include summer living or cold weather clothing costs. Since the issuance of an F-1 visa requires affirmation that the foreign student does not intend to make the United States a permanent residence, the student may not be considered for resident tuition fees.

3. Since processing applications for international students takes several weeks, the application must reach Admissions and Records prior to May 15 for consideration for the fall semester. A person cannot make reservations for on-campus housing until his/her application for admission has been accepted. Therefore, it is recommended that application for admission materials be filed at least eight months prior to the date the applicant plans to enroll if he/she is interested in single student housing.

HIGH SCHOOL ENTRANCE CREDIT REQUIREMENTS FOR ALL BACHELOR'S DEGREE PROGRAMS:
(Total of 11 academic credits required including those listed below.)

	English	Mathematics	Social Science	Natural/ Phys. Sci.
H.S. Core Courses: Required for all freshmen (2.00 gpa in core-11 credit total)	3	2	2	2 (Incl. 1 cr. lab. sci.)
College of Liberal Arts: Applied Statistics, Computer Science or Mathematics majors	3	Algebra-2 Geometry-1 Trig-½ Adv Math-½	2	Nat. Science-1 Physics or Chemistry-1
Physical Educ. majors	3	Algebra-2	2	Biology-1 Physics or Chemistry-1
All Other Liberal Arts majors		Same as Core		
College of Natural Sciences: All majors	3	Algebra-2 Geometry-1 Trig.-½	2	Physics or Chemistry-1 Biology or Elective-1

Rural College				
All majors		Same as Core		
School of Agriculture and Land Resources Management:				
Land Resources Mgt. majors	2	Algebra-2 Geometry-1 Trig-½	2	Physics or Chemistry-1 Biology or Elective-1
School of Engineering:				
All majors	3	Algebra-2 Geometry-1 Trig-½	2	Chemistry-1 Physics-1
School of Fisheries and Ocean Sciences:				
All majors	3	Algebra-2 Geometry-1 Trig.-½	2	Physics or Chemistry-1 Biology or Elective-1
School of Management:				
All majors*	3	Algebra-2 Geometry-1 Trig-½	2	Physics or Chemistry-1 Nat. Sci.-1
*Two years Foreign Language highly recommended.				
School of Mineral Engineering:				
All majors	3	Algebra-2 Geometry-1 Trig-½	2	Physics or Chemistry-1 Nat. Sci.-1

Non-Degree Seeking Students

In order to attend UAF as a non-degree student, one must be a high school graduate or 18 years of age or older. A non-degree student is subject to the placement examination requirements for freshman level courses. A non-degree student is subject to the academic regulations of UAF and is required to maintain a 2.00 average in order to remain in good standing. A non-degree student is not considered a degree candidate until regular admission requirements are met and transcripts filed.

High School Students

Qualified high school students of advanced standing and ability are permitted to enroll in one or two UAF courses while attending high school. To qualify for admission while attending high school, a high school student must present written recommendation of his/her high school counselor or principal, the written approval of his/her parents, and an official transcript indicating a satisfactory GPA in his/her high school work. High school seniors with GPAs of 2.5 or higher may register for two college courses for a maximum of six credits. High school seniors with GPAs of 2.0 to 2.5 may register for one college course per semester. Juniors with GPAs of 2.75 or higher may register for one college course per semester. Qualified high school students of less than junior standing may register for one course per semester with the approval of the Director of Admissions and Records.

Non-Degree Programs for Students with Bachelor's Degrees

An applicant who holds a bachelor's degree but has not defined or declared his/her graduate program may be admitted as a non-degree seeking student if space permits. Students in this category include:

1. Those who plan to take "interest courses."
2. Those completing work for a teaching certificate.
3. Those strengthening their preparation in order to be admitted to graduate study.
4. Transient students expecting to be at UAF only briefly.
5. Students awaiting action on applications for graduate status.

Second Bachelor's Degree Programs — Those applicants who wish to complete second bachelor's degrees must formally apply for admission as undergraduate transfer students.

Academic Bankruptcy for Returning Students

Students occasionally perform at an academic level which makes them ineligible to continue their studies, and they drop out or are dismissed from school. Subsequently, some want to resume their college work but find their previous academic record an obstacle.

Persons who want an opportunity for a fresh undergraduate start at UAF may apply for readmission on the basis that their prior academic record be disregarded and they begin their college study again with no credits attempted and no credits and quality point earned reflected in subsequent grade point average calculations. This policy may be used by a student only once and is applicable only to students enrolled at UAF and only for UAF credits. Academic bankruptcy for records from UAF units which were not part of UAF prior to Fall 1987 may be requested at the time of admission or readmission to undergraduate status.

To declare academic bankruptcy, a student must submit the Application for Academic Bankruptcy form and secure the approval of the dean of the college or school to which the student is admitted or readmitted. Prior to applying for admission on this basis, at least two years must have elapsed since the end of the semester in which the applicant was last in full-time attendance at school.

The prior academic record remains a part of the student's overall academic record, but none of it is carried forward and none of the credits earned previously can be used in the new program. These credits will be included, however, in computations for graduation with honors (See "Graduation with Honors"). Students showing competency in any area may be allowed advanced standing or a waiver of requirements just as any non-bankrupt student, but will not be allowed credit-by-examination for courses lost in bankruptcy.

Course Placement

The American College Testing Program (ACT) and other placement tests must be taken before a new student with less than sophomore standing may complete registration.

English and Mathematics

On the basis of test scores, a student whose background appears to be deficient in English and mathematics may be required to take remedial English and mathematics or both in addition to the requirements of his/her chosen curricula. Achievement in these subjects is essential to success in other study areas. The basic English and mathematics courses are especially designed to assist the student in achieving competency in minimum time.

Generally, placement in Engl. 111 will be made if both ACT English and composite scores are 16 or above.

Placement in mathematics courses is usually based on a combination of the ACT mathematics score plus the number of semesters of high school mathematics completed. Generally, the following scores and semesters of high school mathematics give placement in the courses indicated:

ACT Math Score	*Number of Semesters of High School Math*	*UAF Math Placement*
26 or higher	with 1-8	See Math Department
21 to 25 with	6-8	Math 107, 161, 171
21 to 25 with	less than 6	See Math Department
19 to 20 with	7-8	Math 107, 161, 171
19 to 20 with	less than 7	See Math Department

17 to 18 with	8	Math 107, 161, 171
17 to 18 with	4-7	See Math Department
17 to 18 with	less than 4	DEVM 076
13 to 16 with	1-8	DEVM 076
12 or below	1-8	DEVM Math 075

Foreign Language

A student continuing the study of foreign language begun in high school will be required to take a placement test. If he/she fails to place at the level appropriate to the amount of previous language study, he/she will be allowed to enroll for credit in a course that is one semester below his/her level. Work more than one semester below the normal level will be considered remedial, and although not a prerequisite to further study, will carry no credit.

Transfer of Credit

Credit accepted for transfer to UAF which has been earned at other accredited institutions, through military educational experiences or credit accepted by special approval shall be considered as transfer credit. Where possible, transfer credit will be equated with UAF courses.

The following regulations apply to transfer of credit:

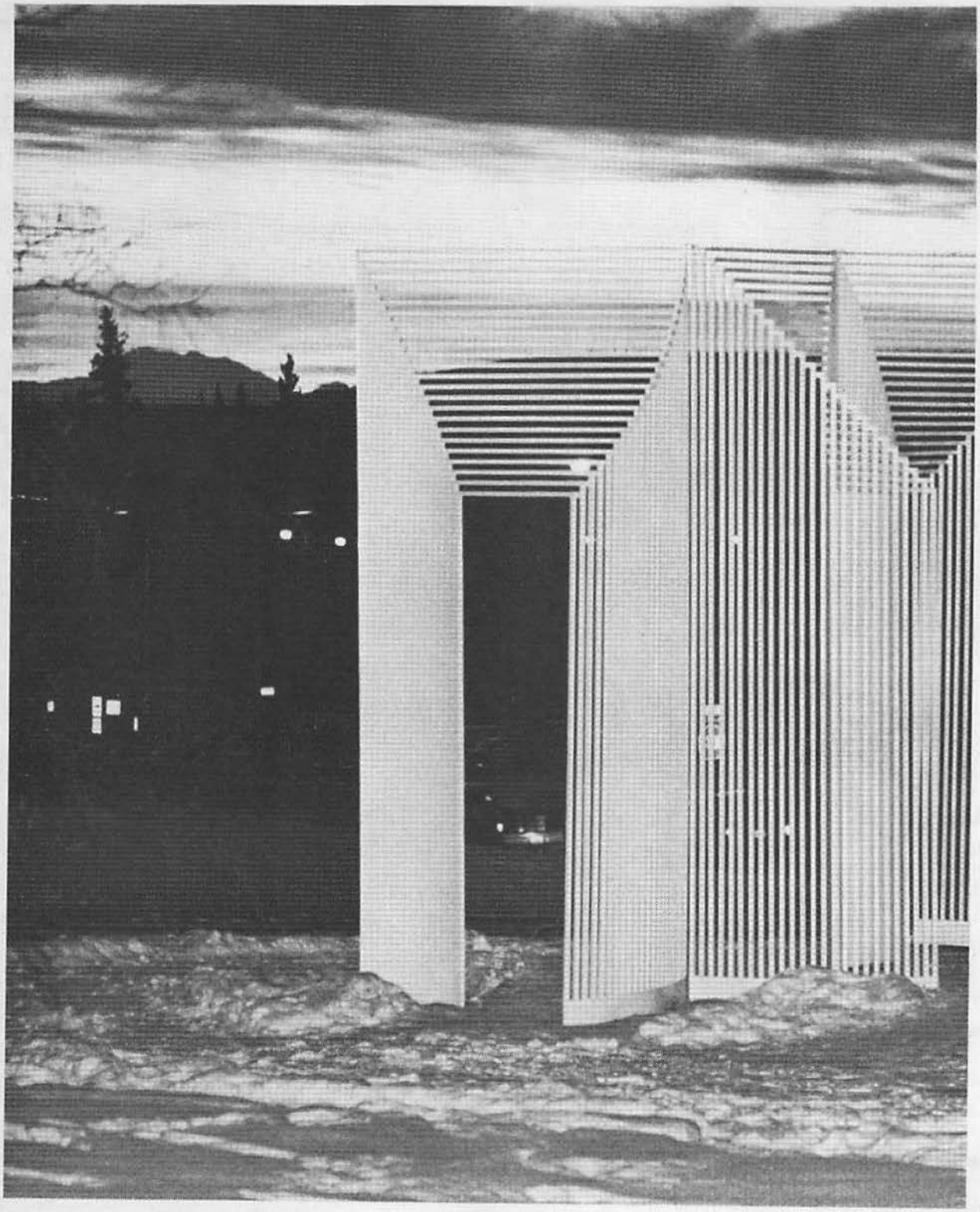
1. Only persons accepted as degree or certificate candidates at UAF are eligible for transfer of credit.
2. The applicability of any transfer credit to major and/or minor requirements is subject to approval by the appropriate major and/or minor department. Transfer students must fulfill the graduation and residency requirements of UAF, including those which may be required for a particular program. Baccalaureate degree candidates must complete 30 of the last 36 credits in residence, including 24 credits of upper-division work, and associate degree candidates must complete 15 of the last 30 credits in residence. A maximum of 60 percent of required course work to earn a certificate may be accepted in transfer.
3. Credits earned at the 100-level or above with a grade of "C" or higher at accredited institutions will be considered for transfer.
4. Transfer credit is not included in UAF grade point computation.
5. The class standing of entering transfer students is based upon the number of credits UAF accepts of their previous college work.
6. Credits may be awarded for formal service schooling and military occupational specialties (MOS) as recommended in the "Guide to the Evaluation of Educational Experience," published by the American Council on Education. A maximum of 49 credits combined from these sources can be applied toward an associate or bachelor's degree. Credit completed through the Community College of the Air Force is considered to be in this category and is subject to the same regulations, as is credit accepted for the completion of Defense Activity Non-traditional Education Support (DANTES) test.
7. Special review for approval of the transfer credit not meeting the requirements stated above may be requested from the director of Admissions and Records.

Undergraduate Admission Requirements in Brief

Admission Category	*Admission Requirements (through Spring 1991)*
BACCALAUREATE	
Freshman*	High school graduation and GPA of 2.00 (C) Completion of 11 credit core with 2.00 (C) GPA
Transfer Student — Less than 30 semester hours of credit*	Same requirements as for freshman (above) 2.00 (C) GPA in previous college work
Transfer Student — More than 30 semester hours of credit	2.00 (C) GPA in previous college work
ASSOCIATE	
Freshman and Transfer*	High school graduation or 18 years of age or older
Non-High School Graduate*	GED or 18 years of age or older
Non-Degree Student**	High school graduation, GED or 18 years of age or older
Auditor	Same requirements as for appropriate category above (freshman, transfer, non-degree, etc.)
International Student	Same requirements as for appropriate category above (freshman, transfer, etc.) Acceptable TOEFL examination scores Acceptable financial statement

*Prior to registration, all first-time degree and certificate students are required to complete the ACT or the SAT, or ASSET test for associate and certificate students, which are used for course placement purposes. The placement test is required for all students planning to take a 100-level written communication or mathematics course and recommended for all entering students.

**Non-degree students are normally limited to enrollment in no more than six credits per semester. Registration for more than six credits in a regular length semester will be allowed for enrollment in not more than two courses.



The Elysian, a sculpture by Linda Howard, is one of many works of art on the UAF main campus.

Admissions clerks Rose Finnerty, left, and Joni Yowe process applications to UAF.

Registration Procedures

Registration

Persons enrolling at UAF must complete registration according to the prescribed procedure and must pay required UAF fees in order to be eligible to attend classes and earn credit. A registration period is held at the beginning of each regular session on dates published in the official university calendar. Registration for special programs, short courses, seminars, and other classes that are not part of the regular academic calendar will be arranged prior to their starting.

Placement Test Requirement

Results from the tests prepared by the American College Testing Program (ACT) or the Scholastic Aptitude Test (SAT) or, for associate degree or certificate students, the ASSET test, are required for all first-time degree or certificate students, transfer students with less than 30 acceptable credits or any student planning to take 100-level written communication or mathematics courses. A placement test is recommended for all first-time students. The test results must be on file with the Office of Admissions and Records before approval for registration is granted. Contact the UAF Testing Office for further information.

Registration Drop Policy

A student is expected to begin attending classes on the first day of instruction. In order to identify potentially available spaces in courses which have reached enrollment limits, departments may require that a student attend the first class session or notify the department in advance that he/she is unable to attend the first class. If the student misses the first class without notifying the department, the student may be dropped from the course and the space assigned to a student on the waiting list.

At the Fairbanks campus, a department wishing to use this option, will notify the Office of Admissions and Records at the time the class schedule is prepared so that appropriate notice can be included in the schedule. After the first class session, lists of the names of the students who are to be dropped from classes will be forwarded by *the department head* to the Office of Admissions and Records so the course can be removed from the students' enrollment files as soon as possible.

Because of enrollment pressures, it is English department policy to drop from the class roll students who fail to attend the first two meetings of a composition course (Engl. 111, 211, 213, 313, and 414), even if they have preregistered. In addition, it is policy in the Department of Speech and Drama to drop from the class roll students who fail to attend the first two meetings of a basic course (Sp.C. 121, 131, and 141) even if they have preregistered.

Should space become available in a class from which a student has been dropped by the department, the student will have to complete the regular drop/add procedure to add the course.

Credit-No-Credit Option

The Credit-No-Credit option encourages students to explore areas of interest not necessarily related to their academic majors.

A student may elect the credit-no-credit option for one undesignated elective each semester. The instructor will not be informed of the student's status in the course. Credit for the course will be awarded if the student's performance is at the "C" level or higher and if performance falls below that level, the course will not be recorded on the student's academic record. In either case, the course will not be included in any GPA calculations and, when credit is granted, a grade of "CR" will be entered for the course.

Elective courses taken to complete general distribution requirements or to meet the minimum credit requirements for the degree may be taken under the credit-no-credit option. Courses required in the major and minor and those specified as foundation courses are not eligible for this option.

Auditing

A student wishing to enroll in one or more courses for informational purposes only may register as an auditor provided that space is available in the course(s). An auditor must pay the standard credit fees for the course, but the credit is not included in the computation of study load for full-time/part-time determination or for overload status.

The requirement, acceptance and review of work and lab privileges are at the discretion of the instructor. No grades will be given, no credit awarded and courses taken as an audit will not apply toward degree requiremens, nor will they transfer to other institutions.

The intention to audit a course should be made known within the registration period. The following conditions apply to the change of audit conditions: A change from audit to credit must be completed on or before the deadline to add a course; a change from credit to audit must be completed on or before the deadline for student-initiated withdrawals.

It is the responsibility of the instructor to set the requirements under which an "AU" is to be recorded and to submit "AU" for those auditors who satisfy the requirements. An auditor not receiving a grade of "AU" receives a "W."

A student who has audited a class may not request local credit by examination for that class for at least one year.

Drop/Add

A student is expected to complete the courses in which he/she is enrolled. The student, however, may withdraw from a course before 60 percent of the scheduled length of the semester session has elapsed by following the Drop/Add procedure. After that time, student initiated withdrawals from individual courses will not be accepted. Students wishing to add courses to their schedules may do so until the end of late registration by following the Drop/Add procedure. Information about the procedure and forms may be obtained from the Office of Admissions and Records.

Withdrawal

After 60 percent of the semester or session has elapsed, withdrawals from individual courses will not be accepted.

Total withdrawal from UAF after 60 percent of the semester or session has elapsed must be initiated by the dean of the college/school in which the student is majoring or the Vice Chancellor for Student Affairs for undeclared students. Total withdrawal forms must be obtained from the Student Affairs office.

The dean initiating the withdrawal will immediately notify the course instructors and the student's adviser of the withdrawal.

Withdrawal from UAF is the official discontinuance of attendance prior to the end of the semester or session.

Withdrawals after the second week, regardless of the type, will appear on the student's permanent record as the letter "W" but will have no effect on the student's GPA nor any reference to the student's standing in the class.

All withdrawals must be acknowledged by the student in writing. A student in a degree or certificate program must obtain a signature from his/her adviser in order to withdraw from a class. An instructor is not required to sign the withdrawal form when a student is withdrawing from his/her course.

The above withdrawal policy deadline will be adjusted for courses shorter in time than the regular semester.

The appeals route for students or faculty regarding the dean's decision is the Chancellor's Office, and then the Fairbanks Grievance Council.

Registration Changes

ACTION	BEGINS**	ENDS	REMARKS
To Add a Class or to Register Late	First day of instruction for the semester	Fifth day of instruction for the semester	Adviser's signature required for student in degree program
To Drop a Class *(Course does not appear on transcript)*	First day of instruction for the semester	10th day of instruction for the semester	Adviser's signature required for student in degree program
Withdrawal from a Class *(Class appears on transcript with a "W" grade)*	11th day of instruction for the semester	When 60 percent of the semester has passed	Adviser's signature required for student in degree program
Total Withdrawal from the University *(student initiated)*	First day of instruction for the semester	When 60 percent of the semester has passed	Adviser's signature required for student in degree program
Total Withdrawal from the University *(dean initiated)*	When 60 percent of the semester has passed	Last day of instruction for the semester	Must be initiated by the dean of the college or school in which the student is majoring or by the Vice Chancellor for Student Affairs for undeclared majors or non-degree students
Credit-No-Credit Option	First day of instruction for the semester	10th day of instruction for the semester	Only *free* electives may be taken under this option

*__Drop/Add__ forms, __Total Withdrawal__ forms and __Credit-No-Credit__ forms must be submitted to the Office of Admissions and Records by the appropriate deadlines in order for the action to be officially recorded.

** The __first day of instruction__ for all semester-length courses is the date indicated as the __first day of instruction in the official semester academic calendar.__ It may not be the first day that a class meets.

Add, Drop, Withdrawal and Credit-No-Credit Option deadlines will be adjusted proportionally for courses that are less than a semester in length.

Alternative Credit Options

Advanced Placement Credit

Advanced placement credit at UAF is awarded on the basis of national or departmental placement examinations. Each department participating in the awarding of advanced placement credit in their disciplines will state in the catalog their methods and standards for awarding advanced placement credit.

Local Advanced Placement Credit

The following advanced placement policies have been established at UAF:

English — An incoming freshman whose English ACT score is 26 or higher or whose verbal SAT score is 600 or higher may receive credit for English 111 by enrolling in a 200 or 300 level

literature course and completing it with a grade of "C" or better. Or, the student may receive credit for English 111 by waiting until he/she has sophomore standing *(30 credits or more)* and then completing English 211 or 213 with a grade of "C" or better. It is the responsibility of the student to submit an "Application for English 111 Credit" form to the Office of Admissions and Records at the end of the semester in which an advanced English course described in the above policy was completed.

Foreign Language — A student with previous exposure to a language outside of college who wants to continue studies in that language is expected to take a placement test so that the course level most beneficial to him/her can be determined.

Upon completion of the course in which he/she has been placed with a grade of "C" or higher, the student will receive credits for that course and, in addition, for the two immediately preceding prerequisite courses, if any, unless he/she has received university credit for these already. A native speaker may not receive credit for 101 and 102 levels.

This policy does not apply to any special topics courses nor to the individual study courses inasmuch as they represent special practice activities and teach special skills, nor to literature or civilization courses.

Mathematics — Placement in mathematics courses is determined by ACT mathematics scores and the number of semesters of mathematics completed in high school. If a student completes Math 201, 202, 273 or 302 with a grade of C or better, the student may also receive credit for any prerequisite calculus course.

College Board Advanced Placement

UAF grants advanced credit, with waiver of fees, for satisfactory performance (a score of three or higher) in the College Board Advanced Placement Tests. These tests are normally completed by students during their senior year in high school.

A student desiring CEEB Advanced Placement credit must request that an official report of his/her scores on the examination be sent to the Office of Admissions and Records and upon his/her enrollment will be awarded appropriate credit. Students may receive credit for more than one Advanced Placement examination.

Correspondence Study

Correspondence Study is one of the programs by which UAF is extending its academic resources to people who seek a college education but cannot, for a variety of reasons, attend traditional classes. The unique advantage of correspondence study is its flexibility. Students select their own hours of study and work at their own pace in surroundings most desirable to them. Correspondence study offers students the freedom to structure a personal academic program and continue educational progress even when personal circumstances make it impossible to attend scheduled classes.

For UAF students, correspondence study courses count as residence credit. When a UAF student enrolls in a correspondence course during the regular semester enrollment period and completes the course during the same semester, the course may be used in determination of full-time/part-time status, consolidated tuition, and eligibility for financial aid and scholastic action. The grade will average in the semester and cumulative grade point averages. When a student enrolls in a correspondence course at other times of the year, the credit and grade will not impact the credit load or semester grade point average for any other UAF semester enrollments.

A Correspondence Study Program catalog detailing policies regarding enrollment, transfer, withdrawal, extension, reinstatement, fees, materials and course descriptions is available from the Center for Distance Education, Rural College, 130 Red Building, University of Alaska Fairbanks, Fairbanks, AK 99775, or call (907) 474-5353.

Credit by Examination

The credit by examination program is administered by the Testing Services Office at the Fairbanks campus. There are several ways that students can earn college credit by receiving a passing score on an exam. For any of the credit by exam options, grades are not computed in the GPA. Students should be aware that credit by examination is not considered UAF residence credit, and is not considered as part of the semester course load for full-time classification.

Only students currently enrolled at UAF or those students previously enrolled at UAF as part of a degree/certificate program may be awarded credit.

The credit by examination options are briefly outlined here, and more information can be obtained from Testing Services.

A. CLEP (College Level Examination Program)

CLEP is a national testing program that awards college credit for some introductory courses. The exams cost $35 each, and are administered once a month. To register for a CLEP exam or to receive more information, contact Testing Services.

The following criteria apply to **CLEP General Exams:**

1. If as many as six semester credits have been earned in an area covered by a CLEP General Exam, no credit will be awarded for the successful completion of that exam.
2. UAF currently accepts credit for all five CLEP General Exams listed below.
   General Exams:
   English Composition w/Essay — Three English 111 credits granted for a 500 score or above.
   Humanities — Six humanities elective credits granted for a 500 score.
   Natural Sciences — Six natural science elective credits granted for a 500 score.
   Social Sciences/History — Six social science elective credits granted a 500 score.

The following criteria apply to **CLEP Subject Exams:**

1. A course challenged for credit must not duplicate a course for which credit has already been granted or for which a student is currently enrolled.
2. A student who has audited a class may not request credit by examination for that class for a period of one year.
3. Minimum passing scores of approved CLEP Subject Exams is 50.

CLEP Subject Exams Currently Accepted

Test Name	UAF Course	
Biology	BIOL 105	4 credits
Educational Psychology	ED 330	3 credits
General Psychology	PSY 101	3 credits
Human Growth & Develop	PSY 240	3 credits
Intro Microeconomics	ECON 201	3 credits
Intro Macroeconomics	ECON 220	3 credits

B. DANTES-DSST (Standardized Subject Tests)

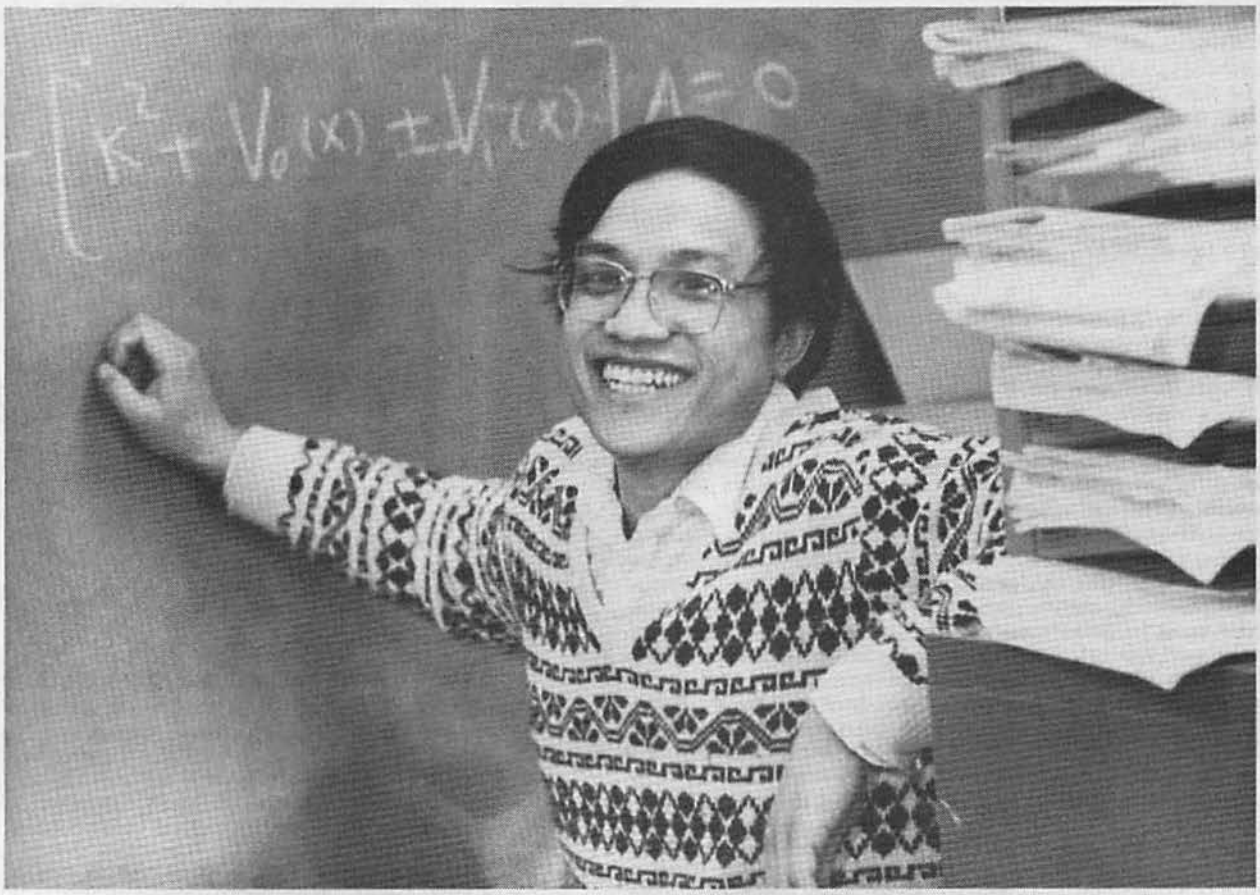
DSST is a national testing program which offers a series of exams in traditional academic, vocational/technical and business subject areas. Credit is transferred for the successful completion of DANTES tests as recommended by the American Council of Education provided the score received is 50 percent or higher. This program is administered on an individually scheduled basis through the Testing Services Office. The cost is $40 per test, and results are available in 10 days to two weeks.

C. Local Credit by Exam Program

1. Students currently enrolled at UAF can be awarded credit through the local credit by exam program. The fee is $15 per credit hour and is nonrefundable.
2. Subject to departmental approval, most courses, except those with course numbers ending -90 through -99 (193, 292, 497, etc.). Contact the Testing Services Office to obtain Credit by Examination forms or to receive more information on challenging a course.
3. A course challenged for credit must not duplicate a course for which credit has already been granted or for which a student is currently enrolled.
4. A person who has audited a class may not request credit by examination for that class until the next school year.
5. As part of the application process, the instructor and the student will mutually agree upon the topics to be covered, the type of exam, the date of the exam and the method of grading.
6. Examinations must be completed within 90 days of the application date. A student not meeting this deadline must reapply and pay an additional fee.

Credit for Prior Learning

Individuals learn a great deal outside the walls of educational institutions. Where this learning is relevant to college-level work or requirements and can be documented in terms of specific knowledge and/or skills, the university can be instrumental in accelerating the learning process through acknowledging, certifying and recording these experiences. Certain departments at UAF offer a program of credit for prior learning which will provide for the granting of from 1 to 45 credits which will substitute for specific courses used to fulfill associate and baccalaureate degree requirements. Participating departments will review credentials and make recommendations for the awarding of prior learning credits which substitute for specific courses. For the associate of applied science degree and the bachelor of technology degree, from 1 to 60 block credits may be awarded based on federal, state or professional certifications or licenses. For further information concerning Credit for Prior Learning, contact the Advising Center at the Fairbanks campus.



Da-Qing Ding, a UAF research assistant, works on some equations at the UAF Geophysical Institute.

Fees and Financial Aid

Fees are for the Fairbanks campus only

Tuition

Total Credit Hours	Resident Student	Non-resident Student
1	$ 38	$ 38
2	76	228
3	114	342
4	152	456
5	190	570
6	228	684
7	266	798
8	304	912
9	342	1026
10	380	1140
11	418	1254
12 or more	456	1368

Students enrolled in graduate credit courses will be charged $75 per credit for residents to a maximum of $675; and $150 per credit for non-residents to a maximum of $1350. The maximum charge for any combination of undergraduate and graduate credits will not exceed $675 for residents and $1350 for non-residents.

Definition of Residency — University of Alaska.

Alaska residents, members of the United States military on active duty and their dependents, members of the Alaska National Guard and their dependents, as well as residents of the Yukon Territory and the Northwest Territories are exempt from a non-resident tuition fee. For purposes of non-resident tuition a resident is any person who has been physically present in Alaska for one year (excepting only vacations or other absence for temporary purposes with *intent* to return) and who declares intention to remain in Alaska indefinitely. However, any person who, within one year, has declared himself/herself to be a resident of another state, voted in another state, or did any act inconsistent with Alaska residence shall be deemed a non-resident for purposes of non-resident tuition. An unemancipated person under the age of 18 who has a parent of guardian who qualifies as an Alaskan resident, as defined above, shall be deemed a resident, and otherwise such unemancipated persons under the age of 18 shall be deemed a non-resident for purposes of non-resident tuition.

This definition of Alaska residency status is solely for the purposes of tuition payment at UAF. The requirements of the university may or may not be the same as requirements of other agencies of the state of Alaska.

Persons wishing to apply for resident status should complete the application for residency status form (the form may be obtained from the Office of Admissions and Records in Signers' Hall.) Applicants should attache a copy of documentary proof of residency in Alaska for the past 12 months. Records presented in support of residency application cannot be returned. Therefore, it is suggested that photocopies of such records be made to turn in with the application. The completed form and the proof of residency should be returned to the Office of Admissions and Records prior to the date of registration.

Acceptable examples of proof of residency are rent receipts, checks written to local merchants throughout the year, a statement from an Alaskan employer, current military I.D., Alaskan high school or college transcripts, or Postal Service verification of an Alaskan address. Contact Admissions and Records for more information.

Other Fees Associated with Registration

(per semester unless otherwise indicated)

Campus Activity Fee (8 credits or more)	32
Course Fees (See course descriptions)	3 - 125
Deferred Fee Charge	10
Graduate Extended Registration Fee	100 or 175
Health Center Fee (12 credits or more)	45
Health Insurance, student (12 credits or more)	133
Housing Fees:	
Housing Reservation/Deposit Fee	25-75
Residence Hall, Double Room/Double Occupancy	520
Residence Hall, Double Room/Single Occupancy	750
Residence Hall, Single Room	640
Student Apartment Complex (each student)	720
Married Student Apartments	225-470/ month
Board Plan (three plans)	700-760
Late Registration Fee	15 - 65
Music Course Fees (music majors maximum: 105)	35-145
Parking Fee	75/year; 40/semester
Preregistration Deposit (applies toward registration fees)	50

All fees are subject to change.

Definitions

Campus Activity Fee — Students carrying eight or more credit hours (including both on- and off-campus courses) will be charged a flat $32 per semester student activity fee. Students living in university housing will be charged the $32 fee regardless of the number of credit hours taken. Students taking one to seven credit hours have the option of paying the fee of $32, but they are not required to do so.

This fee supports the activities of ASUAF (student government) which represents student views and concerns with the university administration, the board of regents and the Alaska State Legislature. This fee also pays for the publication of the *Sun-Star*, the UAF student newspaper.

Those paying the campus activity fee are entitled to use of the Patty Center recreational facilities, and are admitted at student prices to university sponsored athletic events.

Those paying the fee are also entitled to student rates at all ASUAF functions and services, including movies, dances, concerts, rentals, ombudsman, book exchange, legal advice and intramural sports; use of Wood Center facilities; and participation in student elections.

Course Fees — Not all courses have course fees associated with them. Fees for courses range from $3 to $125. See the course descriptions to check on fees for individual courses.

Deferred Fee Charge — A processing fee of $10 is added to the total amount due if a student is approved for deferred fee payment. See **Payment of Fees.**

Graduate Extended Registration Fee — Graduate students extending registration from previous semester must pay the graduate extended registration fee of $100 or $175.

Health Center Fee — The $45 Health Center fee provides basic medical and counseling services at the Student Health and Counseling Center. All students enrolled in 12 or more credits (including any combination of on- and off-campus courses), or living in university housing, must pay the Health Center fee. Students purchasing the Student Health Insurance Plan must pay the Health Center fee when enrolling for the insurance. Active duty military students have the option of paying the Health Center fee.

Full-time students who are not currently taking *any* courses which meet on the main campus and are not living in university housing may obtain a Health Center fee waiver. The approved waiver must be presented at the time of fee payment.

Health Insurance Fee — All students who are registered for 12 or more credits (including both on- and off-campus courses), or living in any university housing, must be covered by health insurance. Students enrolled in six through 11 credit hours may purchase the student health insurance if they also pay the Health Center fee. They may buy the Student Health Insurance offered by the university or show evidence of other insurance coverage. Students covered by other insurance can waive university coverage by submitting a university health insurance waiver form to the registration cashier at regular scheduled fee payment times. Waiver forms can be obtained from the Center for Health and Counseling. The amount of the insurance fee will be quoted at registration. The fee covers participation in a medical plan that covers accidents and sickness.

The Student Health Program is administered by the director of the Center for Health and Counseling. Hospital and medical treatment for extensive illness and injuries are provided in 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. Questions pertaining to insurance coverage and claim filing should be directed to the Center for Health and Counseling staff.

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

Housing Fees — When applying for housing, a $50 reservation **damage deposit** must be returned to the Housing Office with the completed application. **Room rent,** along with all other fees, is due in full at registration (see Payment of Fees). When registering, each residence hall student is required to buy a **board plan** for cafeteria meals. Meal tickets become effective at the evening meal of the first day of registration for each semester. For more information see Housing.

Late Registration Fee — Students registering later than the day designated for that purpose shall pay a late registration fee of $15 for the first working day, plus $5 for each succeeding working day to a maximum of $65. This fee is refundable only in the event that all classes for which the student registered are canceled.

Music Course Fees — Fees are charged for the following services or facilities: private instruction (per each applied music course), $145 (fee for music major is $75); class instruction (class lesson course), $70 (fee for music major is $35); class instruction (functional piano course), $70 (fee for music major is $35). Music majors carrying less than 12 credits must pay full fees. Full-time music majors (12 credits or more) will not have to pay more than $105 for any combination of the above fees. Practice room use by student not enrolled in one of the above music courses, on a space available basis, is $70.

Parking Fee — A $75 annual fee or a $40 semester fee is charged for on-campus automobile parking.

Preregistration Deposit — A $50 deposit is required at preregistration by eligible students completing the process. This deposit will apply as a credit toward the fees for the semester for which the student is preregistering.

Other General Fees

(per use unless otherwise indicated)

Admission Processing Fee	
Certificate or Associate Degree Application	10
Baccalaureate or Graduate Degree Application	20
Credit by Examination fee	15/credit
Late Placement and Guidance Fee	5
Program Plan Fee	5
Records Duplication Charge	2-10
Textbooks (approximate)	250/semester
Transcript Fee	
Regular Service	3/transcript
Immediate Service	10/transcript

All fees are subject to change.

Definitions

Admission Processing Fee — A fee of $20 shall be paid at the time an application for admission to a baccalaureate, master's or doctoral degree is submitted. A $10 fee is required with an application to a certificate or associate degree program.

Credit by examination fee — A fee of $15 per credit hour will be charged for each instance of credit by examination.

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.

Program Plan Fee — The Office of the Director of Admissions and Records will provide without charge one plan for a schedule of courses leading to a degree for currently enrolled degree students with a declared major. A second program plan will be provided for a fee of $5.

Records Duplication Charge — Copies of documents on file in the Admissions and Records Office for a student *(excluding transcripts from any school)* may be obtained by that student, *if time permits,* upon his or her written request at a cost of $2.00 per page to a maximum charge of $10 per request. These copies are unofficial and will bear a statement to that effect. Mailing copies of documents provided through this service is not available.

Textbooks — Students can expect to pay up to $250 per semester for textbooks depending on the discipline.

Transcript Fee — Official and unofficial transcripts of UAF academic records are prepared for a fee of $3 for each copy. Normal processing time is two weeks; however, at the end of a semester or at other times during the year, four weeks should be allowed for processing time.

There are times when a person is in need of a transcript sooner than one can be produced through the regular processing cycle. For a fee of $10, paid at the time the request is made, a transcript will be prepared as soon as possible, but not later than 24 hours after the request is made and the fee paid. For each additional copy of the transcript made from the same request, a $5 fee will be charged. Therefore, when a person needs immediate service for two transcripts, the fee will be $15. All requests for transcripts must be submitted in writing. Information to be included in the request is dates and places of attendance, social security number and date of birth.

Payment of Fees

At the announced time of registration, each student is expected to pay all charges due for the entire semester. This includes tuition and fees, room rent, meal ticket costs, student activity fees, health fee and deposits. In addition, any charges unpaid at the end of previous semesters are due and payable prior to re-enrollment at the university.

Applications submitted on the date of enrollment will be processed on a time-available basis and students run the risk of delayed registration resulting in late fees as well as closed classes.

Registration is not considered complete until the student has gone through the fee payment process.

Students who are unable to pay all charges at the beginning of the semester may apply for deferred fee payment. The Office of Student Affairs and the Financial Aid Office provide applications and approval for deferred fee payment. Approval is based on the student's expected receipt of financial aid, the student's credit history at UAF and the academic background including GPA and the number of credits completed at UAF.

Provisions of the deferred fee payment plan are as follows:

1. A minimum of 50 percent (50%) of all assessed fees must be paid at fee payment unless payment is guaranteed by the Financial Aid Office.
2. The balance is due in a maximum of two equal payments. The dates these payments are due will be determined by the Office of Student Affairs and the student will be informed of these due dates when the deferred payment is approved.
3. A processing fee of $10 is added to the total amount due.
4. Each delinquent payment is subject to a $25 late fee. Students are responsible for meeting this obligation; no bills will be mailed.
5. Student employees of UAF may apply for payroll deduction.

Refunds — General University Tuition and Fees

Course Length	100% Refund	50% Refund	No Refund
Semester length courses	Prior to and during the first 5 days of instruction for the semester	6th through 10th days of instruction for the semester**	On or after the 11th day of instruction for the semester**
Courses meeting more than one week but less than a semester in length	Prior to and during the first 7 calendar cays of the course***	8th through 14th calendar day of the course***	On or after the 15th calendar day of the course***
Courses meeting less than one week in length	Prior to the first day of the course	None	On or after the first day of the course

* *Drop/Add and Total Withdrawal forms must be submitted to the Office of Admissions and Records by the appropriate deadlines in order to qualify for refunds.*

** *The first day of instruction for the semester for the purpose of refunds for semester-length courses is the date indicated as the first day of instruction in the official semester academic calendar.*

*** *Student initiated withdrawals are permitted only during the first 60 percent of a course. Therefore, no refunds will be issued after the withdrawal deadline for any course.*

Consequences of Non-payment

UAF reserves the right to withhold transcripts, diplomas or final grade reports from students who have not paid all financial obligations to the institution. If a student is delinquent in payment of any amount due the university, registration for succeeding semesters may be withheld.

Registration of any student may be canceled at any time for failure to meet installment contract payments or financial obligations. The registration process is not completed until all fees and charges due the university have been paid.

Refunds

A student who is withdrawing from courses or canceling enrollment must complete an official withdrawal form and turn it in at the Office of Admissions and Records. Full or partial refund of undergraduate and graduate credit hour fees, and the non-resident tuition and fees will be made under the following circumstances:

1. In the event that courses for which the student is registered are canceled by UAF, tuition and fees will be refunded in full.
2. If the student formally withdraws from a course, refunds will be made according to the following schedule as determined by the date of the formal withdrawal action.
   A. For semester-length courses:
      1. 100 percent refund of tuition and fees — withdrawal prior to and during the first five days of instruction for the semester.
      2. 50 percent refund of tuition only — withdrawal on or after the sixth day through the tenth day of instruction for the semester.
      3. No refund — withdrawal on or after the eleventh day of instruction for the semester.
      4. For the purpose of the refund policy in A. 1., 2., and 3., the first day of instruction is the date as indicated in the official semester academic calendar.
   B. For courses meeting more than one week but less than a semester:
      1. 100 percent refund of tuition and fees — withdrawal prior to and during the first seven calendar days of the course.
      2. 50 percent refund of tuition only — withdrawal on or after the eighth calendar day through the fourteenth calendar day of the course.
      3. No refund — withdrawal on or after the fifteenth calendar day of the course or after 60 percent of the course has passed.
      4. For the purpose of the refund policy in B. 1., 2., and 3., the first day of instruction is the course start date as indicated in the semester class schedule. Student-initiated withdrawals are permitted only during the first 60 percent of the course. Therefore, no refunds will be issued after the withdrawal deadline for any course.
   C. For courses meeting less than one week:
      1. 100 percent refund of tuition and fees — withdrawal prior to the first day of the course.
      2. No refund — withdrawal on or after the first day of the course.
      3. For the purpose of the refund policy in C. 1. and 2., the first day of the course is the course start date as indicated in the semester class schedule.
3. Claim for a refund must be made in writing to the business office at the time of withdrawal. The certified date of withdrawal, as indicated on the official withdrawal form, will determine the student's eligibility for a refund.
4. Students whose registration is canceled as a result of disciplinary action forfeit all rights to a refund of any portion of their tuition and fees.
5. Vocational/technical course fees shall be subject to this refund schedule.

6. In case the operations of UAF are adversely affected by war, riot, natural act, action of civil authority, strike or other emergency or condition, the university reserves the right to take action to curtail part or all of its operations, including action to cancel classes and action to discontinue services. In any case in which a significant curtailment is judged proper by UAF, the university's liability shall be limited to (at most) a refund of tuition and fees paid.
7. Housing refunds: see the housing section of this catalog.

Financial Aid

What is Financial Aid?

Financial aid helps make college affordable by paying for college and university costs. Financial aid can help pay for tuition and fees, books and supplies and living expenses. The main purpose of financial aid is to provide choice, access and persistence. Choice means students can choose to pursue a college education without first looking at the price tag. Access means students will be able to pay costs of getting into college. Persistence means students will be able to stay in college long enough to complete their educational objectives.

Who Can Apply?

U.S. citizens and eligible non-citizens who are admitted or plan to be admitted to the university may apply for financial aid. Current and prospective students should not assume that they will not need or be eligible for financial aid. Clarifications about student eligibility based on citizenship and residency can be obtained at the financial aid office.

Who Receives Financial Aid?

Approximately 62 percent of all full-time UAF students receive some type of financial aid. Even though students enrolled part time can receive some type of financial aid, the major programs require full-time enrollment.

To receive any financial aid, students must:

1. Be admitted by the Office of Admissions and Records.
2. Be enrolled in a program leading to a degree, diploma or certificate.
3. Be making satisfactory academic progress toward their educational goal.
4. Submit an application to the proper agency administering the financial aid programs.

In addition to these requirements, to receive federal Title IV funds, students must not be in default on any federal Title IV loan or owe a refund on any federal Title IV grant.

Where is the Financial Aid Office Located?

The financial aid office is located on the fifth floor of the Gruening Building on the Fairbanks campus of the University of Alaska Fairbanks. Office hours are from 8 a.m. to noon and from 1 p.m. to 5 p.m. Monday through Friday. The telephone number is (907) 474-7256.

How Do Students Apply?

1. Complete the financial aid form to apply for all financial aid programs except the Alaska Student Loan Program.
2. Mail it, with the correct fee, to College Scholarship Service, Box 23450, Oakland, CA 94623. The University of Alaska Fairbanks CSS code number is 4866.
3. Complete a UAF Financial Aid Application and return it to the UAF Financial Aid Office.

Completing these steps constitutes application for any financial aid offered at UAF, except student loans and state of Alaska programs. A separate application is required for each loan program. Students may be required to submit other documents before aid is received. The forms needed to apply for all financial aid programs are available at the Financial Aid Office at UAF.

Students may apply for the Pell Grant, Stafford Loans and the SLS throughout the school year.

How is Eligibility Determined?

Residence and physical presence in Alaska for at least two years immediately before applying establishes eligibility for the Alaska Student Loan program. Residency and eligibility requirements are explained in greater detail in"The Alaska Student Loan Program" brochure available from the Alaska Commission on Postsecondary Education, P.O. Box FP, Juneau, Alaska 99811.

Submitting a completed application, along with necessary documents, begins the process of determining who will get federal aid. An analysis of the student's ability to pay is compared with UAF's standard expense budget. If the amount of money available is less than total college expenses, the student has a financial need and is eligible for aid.

Estimated expense budgets for typical full-time students for the school year:

	Married Couple or	Single Student Lives Alone	Single Student Lives in UAF Residence Hall
Tuition, fees*	$ 1,332	$ 1,332	$ 1,332
Books, supplies	500	500	500
Food, housing	6,345	4,770	3,246
Transportation	1,017	1,017	270
Misc./personal	1,188	1,188	1,188
TOTAL	$10,380	$8,807	$6,536

*Tuition for non-Alaska residents, add $1,824.

Standard budgets do not always fit everyone. If a student has unusual expenses such as medical bills, special child care or emergency items, the Financial Aid Office will try to provide methods of covering these additional expenses.

What Types of Aid are Available?

Grants and scholarships

Grants are usually based on the student's financial need, while scholarship awards are often based on academic achievement and promise as well as financial need. These types of aid do not have to be repaid. Most grants and scholarships are designed for undergraduate students.

The **Pell Grant** is a federal grant for undergraduates to help start paying college costs. Since this grant is based on financial need, every undergraduate should apply for it. Once you have applied, the federal processor will send you a Student Aid Report (SAR) indicating whether you qualify for a Pell Grant. Send the SAR to the Financial Aid Office. Pell Grants range up to $2,300 for the 1989-90 school year. Eligible students enrolled in four-year degree programs can receive a Pell Grant for no more than five years; no more than six years of Pell Grant are available for students in five-year programs.

The **Supplemental Educational Opportunity Grant** (SEOG) is a federal grant for exceptionally needy undergraduate students. SEOGs at UAF could range from $100 to $4,000 each year.

State Educational Incentive Grants (SEIG) are funded by the state of Alaska for needy students enrolled full-time in undergraduate programs at postsecondary institutions in any state. Grants range from $100 to $1,500 each year. Application materials include filing the FAF and a separate SEIG application available during the spring term.

The **Bureau of Indian Affairs** (BIA) offers federal grants to undergraduate full-time students. Students must be at least one-quarter American Indian or Alaskan Native. These grants are based on financial need and are a supplement to other financial aid. Grants range from $50 to $3,000 or more each year. The average grant at UAF is $1,600. Further information

on BIA grants can be obtained from the BIA Regional Office, 1675 'C' Street, Anchorage, Alaska, 99501-5198, telephone (907) 271-4115.

Some **regional and village corporations** provide scholarships to shareholders. Contact your local corporation for details on eligibility and application procedures.

Scholarships are administered by the **UA Foundation**, the **UAF Alumni Association** and the **Financial Aid Office** as well as various academic departments on campus. Separate applications are generally required for each scholarship. Students can apply for most UA Foundation and UAF Financial Aid scholarships by submitting a single application available in late January at the Financial Aid Office. Scholarship amounts depend on the funding source and vary greatly among scholarships. More information can be obtained from the University of Alaska Foundation, 910 Yukon Drive, Suite 202, Fairbanks, Alaska 99775, telephone (907) 474-7687.

Fee/tuition waivers and talent grants are available in limited numbers to first-time freshmen and new transfer undergraduate students with demonstrated abilities in numerous fields of study. Application should be made as early as possible to the head of the department in which the applicant wishes to study and to the Office of Admissions Counseling, located in Signers' Hall, UAF, Fairbanks, Alaska 99775, telephone (907) 474-7822.

Work

UAF employs student workers for various tasks throughout the year. Employment is administered by individual departments and restricted to full-time students. Students generally work no more than 20 hours each week. Pay rates are based on the job classifications and average pay can vary from $150 to $400 each month. Further information on student employment can be obtained from Employee Relations, 101 Eielson Building, UAF, Fairbanks, Alaska 99775, telephone (907) 474-7700.

College Work Study is a federal program which provides jobs for graduate and undergraduate students with financial need. Job placement and working conditions would be similar to regular student employment.

Loans

A loan for college costs is money that must be repaid. Loans represent a major source of assistance you should consider as you try to meet the full costs of your education. Educational loans generally have long-term repayment schedules, offer low interest rates, and often have provisions for deferring payments. Some loans are based on residency in Alaska while other loans are based on financial need.

The Alaska Student Loan Program (ASL) is administered by the state of Alaska to provide student loans to eligible Alaska residents. Eligibility is based on residency and physical presence in the state of Alaska for at least two years before applying. This program is the major source of financial aid for students at UAF. Undergraduate and vocational students may borrow up to $5,500 each school year. Graduate students may borrow up to $6,500 each school year. The Alaska Student Loan, combined with estimated income for the school year, cannot exceed estimated cost of education as determined by the Alaska Student Loan Office. Repayment begins no later than one year after the borrower's studies are terminated. The finance charge is eight percent interest a year on the outstanding balance. The state of Alaska will pay the interest for students during qualifying period.

The priority deadline for receipt of applications is May 15 for the school year beginning in the fall. Applicants must apply each year. Applications are available throughout the state at high schools and postsecondary schools. Further information about the Alaska Student Loan Program can be obtained from the Division of Student Financial Aid, Alaska Commission on Postsecondary Education, Box FP, Juneau, Alaska 99811, telephone (907) 465-2962 or (907) 465-2990. The Alaska Commission on Postsecondary Education provides access to information about your Alaska Student Loan after you have submitted the application. Access is by way of a computer terminal located in the UAF Rasmuson Library. It is available to the public during normal library hours; you may get answers to questions about the processing of your loan application.

The following table outlines what your monthly payments would be over a 10-year repayment cycle for various loan amounts borrowed. In addition to the principal which must be repaid, interest accrues at a rate of eight percent per year.

Total Loan	Monthly Payments	8 Percent Interest	Principal	Total
$ 3,000.00	$ 38.40	$ 1,608.00	$ 3,000.00	$ 4,608.00
4,000.00	51.20	2,143.60	4,000.00	6,143.60
5,000.00	63.99	2,679.20	5,000.00	7,679.20
6,000.00	76.80	3,216.00	6,000.00	9,216.00
7,000.00	89.60	3,751.60	7,000.00	10,751.60
8,000.00	102.39	4,287.20	8,000.00	12,287.20
9,000.00	115.19	4,822.80	9,000.00	13,822.60
10,000.00	128.00	5,389.60	10,000.00	15,359.60
20,000.00	255.99	10,719.20	20,000.00	30,719.20

The **Stafford Student Loan Program** provides federally subsidized student loans from a participating lender, such as a bank, credit union or savings and loan association. First- and second-year students may borrow up to $2,625 each year. Upper level undergraduates may borrow up to $4,000 each year with a total cumulative maximum of $17,250. Graduate students may borrow up to $7,500 each year up to a total, including all prior Stafford Loans, of $54,750. Since this loan is based on financial need, a FAF must be filed before the application can be certified by the Financial Aid Office.

Many national lenders and a few local lenders participate in the program. Inquire at your hometown bank or pick up an application from a representative group of lenders at the Financial Aid Office.

Supplemental Loans for Students (SLS) is a federal loan program which allows all students to borrow up to $4,000 each year with an aggregate loan maximum of $20,000. Other aid must be considered when determining eligibility. Payment of interest is due monthly although repayment of principal will not begin until the student leaves school.

Parent Loan for Undergraduate Students (PLUS) is a program for the parents of dependent students. Parents can borrow up to $40,000 each school year on behalf of an eligible student.

A variable interest rate or finance charge, not to exceed 12 percent, is determined each year for SLS and PLUS programs.

The **Family Education Loan Program** is a state loan program which allows the student's family to share the cost of the student's education. As an alternative to the ASL, the family member can borrow up to $5,500 for an undergraduate and up to $6,500 for a graduate. The interest rate is 15.5 percent.

University Loans are short-term loans for enrolled students and are made to cover unanticipated/emergency education-related expenses. Students who have completed at least one semester as a full-time student in good standing at UAF may apply for a maximum of $500 per academic year. Interest rate is four percent per annum. Loans must be repaid by December 1, 1989 for students who terminate studies at UAF at the end of the fall 1989 semester; by April 15, 1990 for students leaving at the end of the spring 1990 semester; or by July 15, 1990 for students who will be returning to UAF for the fall 1990 semester.

Applicants must be in good academic standing and must have no outstanding debt with UAF. A co-signer is required and students are required to verify their need for the loan. Applications will be accepted from the first day following late registration until 30 days before the end of each semester.

Emergency Loans are available to regularly enrolled full-time students whose financial need is modest and temporary. Students may borrow up to $100 to be repaid within 30 days. A $2 service charge is assessed for each loan.

Applicants must be in good academic standing and must have no outstanding debt with UAF. Applications will be accepted from the first day following late registration until 30 days before the end of each semester.

To be eligible for the federal Title IV student aid programs; Pell Grant, SEOG, College Work Study, GSL, SLS and PLUS, you cannot owe a refund on any federal grant nor can you be in

default on any federal loan for attendance at any institution. Some financial aid is based on the expected receipt of aid from other programs. To receive as much aid as possible, you should apply for the Pell Grant Program. More information about the federal programs is found in the publication "The Students' Guide to Five Federal Financial Aid Programs 88-89." The Federal Student Aid Information Center has a toll free number, 1-800-333-4636, 9 a.m. to 5:30 p.m., Monday through Friday, eastern time, for students, parents and educators to inquire about student aid and the application process.

Each applicant for financial aid will be sent a Financial Aid Notice which explains the type of aid that is offered by the Financial Aid Office. Students may accept or decline the offer of aid. Students must apply each year for financial aid.

UAF reserves the right to revise any financial aid award. Modification of awards may be required due to lack of federal or state funding, corrections or changes in the data reported to the university by parents and/or students, receipt of additional awards from non-college sources, unintended error, student changes in credit load, change in residence, or other reasons consistent with university policies and procedures.

What are the Application Deadlines?

Applications	Priority deadlines
Alaska Student Loan	May 15
Financial Aid Form	May 1
Pell Grant	Apply anytime during the school year
UAF scholarships	February 15

What Does it Take to Remain Eligible?

To continue to receive financial aid, UAF requires aid recipients to be "in good standing" which means undergraduates must earn a cumulative 2.00 or higher grade point average (GPA) for all course work for which financial aid was paid; graduate students must maintain at least a 3.00 GPA to be eligible. The semester GPA must be 1.50 or higher for undergraduates of 2.50 or higher for graduate students. The Financial Aid Office monitors the academic progress of aid recipients. Both semester and cumulative GPA must be maintained for continued eligibility. Students can expect to receive aid for a maximum of 10 semesters or 130 semester credits for an undergraduate degree or 36 semester credits for a master's degree. Doctoral candidates must follow the time frames determined by their departments and institutional committees.

Aid will be suspended for students who fail to complete the required credits with the minimum GPA or who exceed the maximum number of semesters or credit hours. Generally, students can regain eligibility for participation in student aid by completing 12 credits with at least a 2.00 GPA. Any student whose aid has been suspended may appeal that decision. A written appeal which states the reasons for the failure to maintain satisfactory progress standards and the steps taken to meet those standards in the future is required. Appeals should be directed to the director of Financial Aid. A complete description of the satisfactory progress requirements is available at the Financial Aid Office.

How is Payment Made to the Student?

Tuition, fees and amount due UAF at the time of disbursement should be paid before the proceeds of your financial aid is released. Disbursement is usually in equal amounts, one-half of total award, at the beginning of each semester. All financial aid checks are released to students at the Business Office in Signers' Hall. Proper identification with photograph must be presented before checks will be released.

Students should allow at least five days for processing after the award letter is signed and returned before inquiring about their checks.

What are the Rights and Responsibilities of Accepting Financial Aid?

Your rights

As a financial aid recipient at UAF, you have the right to:

A. Know what financial programs are available to you.
B. Know how to apply, how eligibility is determined and what terms and conditions are related to your aid.
C. Know how the university determines whether you are making satisfactory academic progress toward your degree and what happens if you are not.
D. Request an explanation of your financial aid package, including what portion is gift and what portion must be repaid and the terms of repayment.
E. Know the costs of attending UAF and the refund policy for students who withdraw.

Your responsibilities

To receive financial aid at UAF, you must:

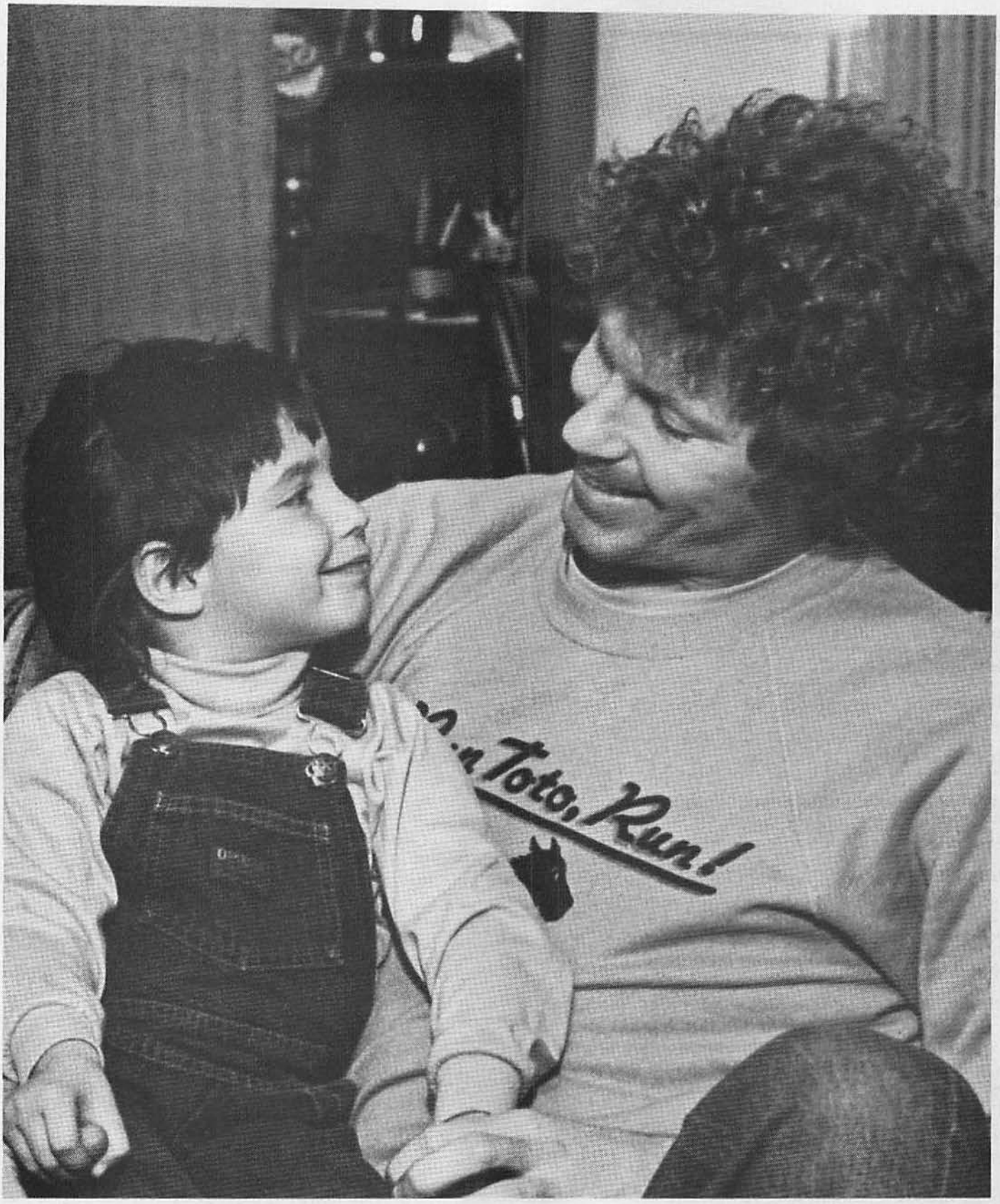
A. Complete all financial aid forms accurately and file them on time.
B. Apply every year because financial aid is not automatically extended from year to year.
C. Provide correct information on all applications and documents submitted.
D. Read and understand all documents you sign. You should also keep copies of them for your records.
E. Know the limits and conditions of financial aid programs.
F. Notify the Financial Aid Office of any change of address, name, marital status, attendance status or receipt of additional awards.

For more information on financial aid at UAF, contact: Financial Aid Office, University of Alaska Fairbanks, Fifth Floor, Gruening Building, Fairbanks, Alaska 99775, telephone (907) 474-7256.

Financial Aid in Brief

Eligibility Requirements	Pell Grants	BIA Grants	Supplemental Educational Opportunity Grants (SEOG)	College Work Study (CWS)	UAF Scholarships	Guaranteed Student Loans (Renamed Stafford Loans)	Alaska Student Loans
Undergraduate	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Graduate	No	Yes	No	Yes	Yes	Yes	Yes
Must be admitted to degree or certificate program at UAF	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Must be U.S. citizen or eligible non-citizen	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Must have financial need	Yes	Yes	Yes	Yes	No	Yes	No
Must be making satisfactory academic progress	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Must apply by May 15	No*	No	Yes	Yes	No: Feb. 15	No*	No**
Must be a full-time student	No	Yes	Yes	Yes	Yes	No	Yes
Must be repaid	No	No	No	No	No	Yes	Yes

* Can apply throughout the school year
** Priority deadline is May 15



Student government President Foster Wallace relaxes with his daughter Emily in the head resident's apartment at Lathrop Hall.

Housing

Residence Halls

In General

Each residence hall is staffed with a Head Resident and several Resident Assistants. The Head Resident is responsible for administration, and programming within the hall. The resident assistants are full-time students who work with the Head Resident in planning and administering a program of social, recreational and cultural activities.

Eligibility

In general, students must maintain full-time status (12 credits for undergraduate and nine credits for graduate students) to qualify for student housing. Graduate student extended registration is considered full time for purposes of housing allocation. Students already living on campus renew their contracts each semester in order to maintain eligibility for the following semester. Students should consult the housing staff about regulations concerning maximum terms of occupancy. Since housing applications are mailed to students with acceptance letters from the Office of Admissions and Records, students should plan to complete their enrollment applications well in advance.

Residence Hall Application Procedures

After receiving acceptance letters, students should complete the enclosed housing application for **room and board.** It should be mailed immediately to the Housing Office, University of Alaska Fairbanks, Fairbanks, Alaska 99775-0880 with a $50 reservation and damage deposit. Confirmation for residence hall housing is assured when the student receives written notification from the Housing Office.

Fees

Room Rent — Along with all other fees, room rent is due in full at the time of registration. Current semester room charges are $520 per person in double rooms; $640 for single rooms; $720 per person in apartments; and $750 for double/single rooms (when available). These rates are subject to change prior to July 1. Room fees permit the use of hall services such as lounge and recreation rooms, non-pay laundry areas and local telephone service.

Refund of Deposits — Room reservation/damage deposits will be refunded for students who choose to withdraw their housing contracts if a written statement is received by the Housing Office at least 45 days prior to the official semester opening.

During occupancy, deposits are held until the contract period ends. Deposits will be automatically transferred to subsequent semesters for students renewing their housing contracts.

Upon termination of room contracts, deposits will be refunded if all contractual provisions have been met and no room cleaning or damage charges have been assessed. The Housing Office and the university reserve the right to deduct from the balance of the deposit other outstanding financial obligations.

Contracts — Room and board contracts are for one semester. Contracts begin officially at 9 a.m. on the opening date.

Contracts may be voided if students do not maintain full time academic status (as defined by the Housing Office). Residents may be released from contracts because of marriage, health reasons or other emergencies deemed appropriate by the director of Housing.

Board Plans

Dining services on campus are provided for the university by a private contractor. Board programs begin in the Lola Tilly Commons the morning following the official opening, and end on the last day of final exams. During vacation periods, the Commons is closed and limited food service is available at other campus locations on a cash basis.

There are 19 scheduled meals per week (breakfast, lunch and dinner are served Monday through Friday and brunch and dinner are served Saturday and Sunday). Three different board plan options are available to students. Full service at **19 meals per week costs $750.** Students may elect to purchase the **14 meals per week program at $725.** The third option **costs $700 and includes seven meals per week plus a $200 credit** at campus outlets operated by the contractor.

Students who do not live in university residences may be authorized by the director of Housing to purchase a board program. The cost includes the price of the board program selected plus a board net charge of $110. This additional charge is used to maintain the dining facilities and equipment. Board net costs are paid by residential students as part of their rent.

Available Facilities

Wickersham Hall houses 95 female students on three floors in single rooms and suites. The suites consist of two double sleeping rooms, a study and a half-bathroom. This building is named for Judge and Mrs. James Wickersham. Judge Wickersham introduced into Congress the bill that created the University of Alaska, and Mrs. Wickersham served on the Board of Regents.

McIntosh Hall houses 102 male students in double and single rooms on four floors. John E. McIntosh is a former president of the Board of Regents.

Nerland Hall houses 102 male and female students in double and single rooms on four floors. This hall is named for Andrew Nerland, a pioneer Fairbanks merchant.

Stevens Hall houses 102 male and female students in double and single rooms on four floors. The hall is named for Morton Stevens who was president of the Board of Regents from 1921 to 1932.

Lathrop Hall houses 140 male and female students in double rooms. This building is named for Fairbanks businessman Austin E. Lathrop. He served as a member and later as vice president of the Board of Regents from 1932 until his death in 1950.

Skarland Hall houses 138 male and female students in double and single rooms on four floors. Skarland Hall contains rooms on the first floor designed to accommodate mobility impaired students. This building is named for Ivar Skarland, who was long-time professor of anthropology at the university.

Moore Hall houses up to 322 students in double and single rooms within its eight floors. This building is named for Terris Moore, the second president of the university. President Moore still visits residents whenever his travels include a stop on the Fairbanks campus.

Bartlett Hall houses 322 male and female students in double and single rooms on eight floors. Bartlett Hall is named for E.L. "Bob" Bartlett who served 24 continuous years as one of Alaska's U.S. senators.

Student Apartment Complex (SAC) is comprised of 60 two-bedroom apartments accommodating 240 upperclass single

students. A board plan is not required for apartment residents. This complex includes six apartments which were designed to accommodate mobility impaired students.

Rooms

Student rooms are equipped with a bed, desk, chair, mirror and dresser space for each resident. Students must provide their own bedding (sheets, pillows, blankets), towels and face cloths. Each hall has recreation-lounge and laundry facilities. Regular custodial service is provided in common areas such as corridors, lounges and centrally located bathrooms.

Residence hall students are permitted to remain on campus during the Thanksgiving and spring vacation periods at no additional cost.

Room Assignments

Hall reservations are made based on date of receipt of deposit, provided application and deposit requirements have been completed. Specific room assignments will be given to students upon their arrival.

Current resident graduate and upperclass students are given preference over incoming students for single room and apartment assignments. Single room applications are available to juniors, seniors and graduate students after the Housing Office has confirmed the acceptance of housing contracts. Single room applications are due March 1 and December 1 of each year for subsequent semesters.

Student Family Housing

In General

Family housing is provided in several different locations. All have access to non-pay laundry facilities, parking facilities and limited storage space. All apartments are furnished except those at Yak Estates and Garden Apartments (see Available Facilities below).

Residents are required to supply their own personal items including dishes, utensils and bedding.

Eligibility

In general, students must maintain full-time status (12 credits for undergraduate and nine credits for graduate students) to qualify for student housing. Graduate student extended registration is considered for purposes of housing allocation. Eligibility for family housing is contingent upon acceptance as a student at UAF. Students should consult the housing staff about regulations concerning maximum terms of occupancy.

Student Family Housing Application Procedures

Applications for student family housing are mailed upon request by the Housing Office when proof of admission is received. A reservation deposit of $25 is due with the completed application. An additional $50 cleaning/damage deposit is required upon assignment to apartments.

Space is always in high demand in student family housing. Apartments are assigned on a first-request basis.

For more information about family housing, write: Housing Office, University of Alaska Fairbanks, Fairbanks, Alaska 99775-0880.

Available Facilities

Harwood Hall houses 36 married student couples without children in 18 efficiency and one-bedroom apartments. All of these apartments are furnished. This building is named for Boyd Harwood, a former member of the Board of Regents.

Stuart Hall contains 12 furnished one-bedroom apartments available for married couples without children. This building is named for Walter T. Stuart who was a member of the Board of Regents.

Walsh Hall has 13 one-bedroom furnished apartments occupied by married couples without children. This building is named for the late Michael Walsh, of Nome, who was a member of the Board of Regents.

Hess Village contains 72 furnished apartments consisting of: 16 one-bedroom; 48 two-bedroom; and eight three-bedroom apartments. These apartments are available for married couples or single parents with dependent children. Apartments are assigned according to family size. Hess Village is named for Luther Hess, who was a member of the Territorial Legislature, and Harriet Hess, who was a member of the Board of Regents.

Garden Apartments houses six married couples or single parents with dependent children in two-bedroom apartments. These apartments are unfurnished.

Yak Estates townhouse apartment complex, located approximately two miles from campus, has 48 two-bedroom and 48 three-bedroom unfurnished apartments. **Pets are allowed in this complex.**

Academic Regulations

Academic Honor Code

All students who have enrolled in UAF will work in accordance with the Honor Code. The university assumes that the integrity of each student and of the student body as a whole will be upheld. Honesty is a primary responsibility of each student. It is also the responsibility of each student to help maintain the integrity of the entire student community.

The Honor Code

1. Students will not collaborate on any quizzes, in-class exams, or take-home exams that will contribute to their grade in a course, unless permission is granted by the instructor of the course. Only those materials permitted by the instructor may be used to assist in quizzes and examinations.
2. Students will not represent the work of others as their own. A student will attribute the source of information not original with himself or herself (direct quotes or paraphrases) in compositions, theses and other reports.
3. No work submitted for one course may be submitted for credit in another course without the explicit approval of both instructors.

Violations of the Honor Code will result in a failing grade for the assignment and, ordinarily, for the course in which the violation occurred. Moreover, violations of the Honor Code may result in suspension or expulsion of a student from UAF.

Instructors shall either deal with suspected violations of the Honor Code themselves or refer such matters to the University Disciplinary and Honor Code Committee (UDHCC). If the instructor believes that a student should be suspended or expelled from the university for an Honor Code violation, the instructor must request a hearing before the UDHCC. The UDHCC shall decide if the Honor Code has been violated. If it has not been violated, the instructor will evaluate the assignment according to his or her normal procedures. If it has been violated, the instructor will determine how this violation affects the student's grade for the course; the UDHCC will recommend to the Vice Chancellor for Student Affairs whether the student should be dismissed from UAF. The UDHCC operates under procedures outlined in the "A" Book.

Access to Records

Under the Family Educational Rights and Privacy Act of 1974, students are entitled to review their records. Except for directory information, no personally identifiable information will be disclosed to agencies outside UAF without the written permission of the student. Records are made available for legitimate UAF professional use on a need-to-know basis.

Directory information is disclosed to the public on a routine basis unless the student requests, in writing, to the Director of Admissions and Records that such information not be released. Forms to request that directory information not be released are available in the Office of Admissions and Records. These forms must be completed each semester. No directory information will be released during the first five working days of each semester. After that time, such information will be released when appropriate, unless otherwise requested in writing. The following is considered directory information:

1. Name.
2. Address, telephone.
3. Home address (permanent).
4. Weight and height of students on athletic teams.
5. Date of birth.
6. Dates of attendance and current class standing.
7. Major field(s) of study.
8. Degrees and awards received, including dates.
9. Participation in officially recognized activities.

Full-, Part-time Status/Study Load

An undergraduate student who registers for 12 or more semester credits at UAF is classified as a full-time student; a graduate student registered for nine or more credits at UAF is considered as full-time. In order to complete an undergraduate program in four years, a student must earn 16 or 17 credits each semester. One may enroll in up to 18 credits per semester without special permission. For enrollment in 19 credits or more, the student must have a 3.00 cumulative grade point average, and an overload approval by the adviser, department head and dean of the college or school in which the student is majoring.

Credits carried at any unit of UAF are considered in the determination of study load hours and for full-time or part-time classification. Courses that are audited, taken for credit by examination are not included in the study load computation. Only semester-based correspondence study courses may count in the study load.

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	60-89 credits
Senior	90 credits

Transfer students will be given class standing on the basis of the number of transfer credits accepted by UAF. Non-degree students are registered without class standing. Graduate students are given the class standing of "graduate" only after being officially admitted to master's or doctoral programs.

Attendance

Regular attendance is expected in all classes. Unexcused absences may result in a student receiving a failing grade. It is the responsibility of the student to confer with the instructor concerning absences and the possibility of working out acceptable arrangements for making up missed work.

Students who choose to be absent from class to participate in university-sponsored or other activities may be permitted to make up any work they have missed. All arrangements between student and instructor must be made prior to the absence. The student and instructor should make a good faith effort to assure that the student is not unduly penalized for each absence. Such activities should not be scheduled so as to conflict with the finals schedule.

Majors — Undergraduate Students

A qualified undergraduate student may declare a major when he/she is officially admitted to UAF. Any degree student who does not follow a curriculum leading to a specific degree will be enrolled with an "undeclared" major. A student with an interest in a particular school or college, but who has not selected a major, will be enrolled as a non-major within that division. Non-degree students are not eligible to declare a major or to be assigned class standing.

A student may change a major only at the beginning of a semester. A Change of Department and/or Major form, which may be obtained at the Office of Admissions and Records, must be completed and the student must obtain the written consent of the heads of the departments concerned.

Associate degree or certificate students wishing to declare baccalaureate degree majors must complete the admission process for bachelor's degree programs. (See "Undergraduate Admissions.")

Grade Point Average (GPA) Computation/Grading System

For the computation of a GPA, the number of UAF credits attempted is divided into the number of grade points earned. To determine the number of grade points earned, the credits attempted for each semester are multiplied by a grade point factor based on the grades awarded. Credits attempted where grades of AU (audit), CR (credit), DF (deferred), NB (No Basis), ENR (enrolled), I (incomplete), P (pass), S (satisfactory) or W (withdrawn) have been awarded are not included in the GPA computation. In addition, noncredit courses, transfer credits and credit by examination do not affect the GPA calculations. Undergraduate work is not included in the GPA for graduate students. When one completes a bachelor's degree, the GPA in future work is calculated only on the credits and grades earned since the bachelor's degree was awarded. An exception to this is made if the student is officially admitted to a second bachelor's degree program.

All grades (original and retakes) for a course completed at UAF will be shown on the permanent record but only the last grade achieved at UAF for a course will be computed in the GPA unless the course is designated as one that can be repeated for credit. For scholastic standing calculations for graduate students, the GPA includes all courses identified on the student's advancement to candidacy form (including repeats). For those graduate students who have not been advanced to candidacy, the GPA includes all courses (including repeats) taken since admission to graduate study.

Grades in all courses are letter grades unless otherwise specified in the class schedule. The method of grading (letter or pass/fail) is an integral part of the course structure and is included in the course description. It is the same for all students taking the course. The use of pluses or minuses in grading rests with the instructor of each course. The symbols are advisory information only and carry no numeric weight in computation of the grade point average. If used, the pluses and minuses will appear on grade reports and official transcripts of academic history. All instructors are expected to state their grading policies in writing at the beginning of each course.

Grades appearing on academic records are as follows with grade point factors in parenthesis:

A (including -)
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 (four grade points per credit).

B (including +/-)
Indicates outstanding ability above the average level of performance (three grade points per credit).

C (including +/-)
Indicates a satisfactory or average level of performance (two grade points per credit).

D (including +/-)
The lowest passing grade, indicates work of below average quality and performance (one grade point per credit).

F (including +/-)
Indicates failure (no grade points). All "F" grades, including those earned in pass/fail courses, are included in the GPA calculations.

P **Pass** — The grade "pass" indicates satisfactory completion of course requirements at either the undergraduate or graduate level. A "pass" grade does not affect the grade point average but credits earned with "pass" grades may apply toward meeting degree requirements and may be used as a measure of satisfactory progress. Satisfactory performance is the equivalent of a grade "C" or better in undergraduate coursework and "B" or better in graduate courses. The entire class must be graded pass/fail and the grading system will be noted on the class schedule.

S **Satisfactory** — Used only to indicate satisfactory final completion of graduate theses.

Cr Indicates credit was given under the credit-no-credit option.

DF **Deferred** — Indicates that the course requirements cannot be completed by the end of the semester, that credit may be withheld without penalty until the course requirements are met within an approved time. This designation will be used for such courses as theses, special projects, etc., that require more than one semester to complete.

AU **Audit** — A registration status indicating that the student has enrolled for informational instruction only. No academic credit is granted.

W **Withdrawn** — Indicates withdrawal from a course after the first two weeks of a semester.

I **Incomplete** — A temporary grade used to indicate that the student has satisfactorily completed (C or better) the majority of the work in a course, but for personal reasons beyond the student's control has not been able to complete the course during the regular semester. Normally, an incomplete is assigned when the student is currently in the class until at least the last three weeks of the semester or summer session. Negligence or indifference are not acceptable reasons for an "I" grade. The deferred grade (DF) may be used for those cases when a student is unable to complete a course due to institutional reasons, such as a breakdown of laboratory equipment. The No Basis (NB) grade may be used solely at the discretion of the instruction if there is insufficient basis for evaluation to occur.
At the time the "I" grade is given, the instructor will include a statement of the work required of the student to complete the course and a copy of the Notice of Incomplete Grade form will be sent to the dean of the college or school in which the student is enrolled. An incomplete must be made up within one year or it will automatically be changed to an "F" grade. The "I" grade is not computed in the student's GPA until it has been changed to a regular letter grade by the instructor or until one year has elapsed at which time it will be computed as an "F." A senior cannot graduate with an "I" grade in either a UAF or major course requirement. To determine a senior's GPA at graduation, an "I" grade will be computed as a failing grade.

NB **No Basis** — An instructor has the option of awarding a No Basis (NB) grade if there is insufficient student progress and/or attendance for evaluation to occur. No credit will be given nor will the "NB" be calculated in the GPA. This is a permanent grade and may not be used to substitute for the Incomplete (I). It may not be removed by subsequent completion of outstanding work.

Academic Progress

Midterm grade reports are optional for each campus of UAF. When used, they are required for all freshmen with a grade of less than C. It is the instructor's responsibility to assure that all students are aware of the grading policy for their course and that homework, exams, etc. are returned in a timely manner so that students know their class performance.

Academic Honors

The Dean's List — To be eligible for the Dean's List, a student must be an undergraduate enrolled in at least 12 UAF

credits graded with letter grades and must have earned a minimum GPA of 3.5 for the semester in UAF courses.

The Chancellor's List — To be eligible for the Chancellor's List, a student must be an undergraduate enrolled in at least 12 UAF credits graded with letter grades and must have earned a GPA of 4.00 in UAF courses.

The Chancellor's List and Dean's List awards will be recorded on the permanent student record.

Academic Standards

UAF has set scholastic standards so undergraduate degree and certificate and non-degree students enrolled in more than nine credits earning less than satisfactory grades will examine their objectives carefully before continuing. The scholastic standards are designed so that action is taken before a student's record deteriorates to the point that readmission to UAF or to another college or university becomes a problem. In all cases involving poor scholarship, students are encouraged to consult with their advisers, instructors or deans.

At the end of a semester, an undergraduate or certificate student or non-degree student enrolled in more than nine credits failing to earn a GPA of 2.00 in courses at UAF will be subject to scholastic action. Depending upon the circumstances, scholastic action may result in a student being placed on probation, continued on probation or disqualified from the university.

Probation — Academic probation will occur when the grade point average of an undergraduate degree or certificate student or a non-degree student taking more than nine credits grade point average falls below 2.00. A student previously on probation whose semester and/or cumulative GPA is less than 2.00 may be continued on probation if circumstances warrant. The probation determination, which is made by the dean of the college in which the student is majoring, may include conditions and/or credit limitations which the student is expected to fulfill during his/her next enrollment at UAF. Probation students may be referred for developmental advising/education and/or to a counseling center. In order to be removed from probation, a student's cumulative and semester GPAs must be 2.00 or higher.

Academic Disqualification — If a student's cumulative record indicates poor scholarship, the dean of the college in which the student is majoring may recommend that the student be disqualified from degree status. A disqualified student may continue enrollment at UAF only as a non-degree student, limited to enrollment in nine credits or less per semester, until reinstated into his/her program. A student must apply for readmission when he/she wishes to be restored to degree seeking status.

Good Standing — An undergraduate student is in good standing when his/her cumulative GPA and most recent semester's GPA are 2.00 or better.

Change of Grade Policy

A grade, other than an incomplete or deferred, submitted by the instructor upon completion of a course, is assumed to be the student's final grade and it becomes part of the student's permanent record. A grade may not be changed unless a legitimate error has been made on the part of the instructor in calculating the grade and such a change must be approved by the instructor's unit head and dean. Corrections of grading errors must be made within 30 days after the beginning of the next regular semester.

Reserving Courses for Graduate Programs

A senior student at UAF who has only a few remaining requirements for his/her bachelor's degree may take courses at the upper division or graduate level if space is available and have them reserved for an advanced degree. To do this, a student must be in his/her final year of an undergraduate program and must submit a written petition during the first four weeks of the semester identifying which courses being taken that semester are to be reserved for graduate study and are not to be counted toward the bachelor's degree. (Reserving these courses, however, does not assure that they will be accepted by a graduate advisory committee as part of the student's eventual graduate program.)

Graduation

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

Application for Graduation — Degree candidates must formally apply for graduation. The application for graduation must be filed with the Office of Admissions and Records during the semester the student plans to graduate, and not later than the application filing dates which appear in the UAF academic calendar.

Applications for graduation filed after the deadline date will be processed for graduation the following semester.

Diplomas and Commencement — UAF issues diplomas to degree candidates three times each year: in September following the summer session, in January at the close of the fall semester, and in May at the end of the spring semester.

All students who complete degree requirements during the academic year are invited to participate in the annual commencement ceremony which follows the spring semester.

Graduation with Honors — In order to graduate with honors, an undergraduate student must have earned a cumulative grade point average in all college work attempted at UAF of 3.5 or higher. In addition, a transfer student must have completed 48 semester hours of credit at UAF for a baccalaureate degree or 24 semester hours of credit at UAF for an associate degree. The cumulative grade point average in all college work attempted at all other institutions attended combined with the UAF cumulative grade point average must not be less than 3.5.

Students with cumulative grade point averages of 3.5 will be graduated *cum laude*; 3.8, *magna cum laude*; 4.0, *summa cum laude*, provided they meet the requirements stated above.

Student Behavioral Standards

Education at the universit[illegible] citizenship as well as for pe[illegible] development.

Generally, UAF behavioral r[illegible] each student work efficiently in[illegible] the campus environment. The[illegible] individuality but rather to encou[illegible] pline and acceptance of social [illegible] tions, in most instances, have be[illegible] and students. Students should b[illegible] policies and regulations as publis[illegible] *The A Book*, which is available at [illegible] in Wood Center.

[illegible] Office

Student Rights and Responsibilities

The university prescribes to principles of due process and fair hearings as specified in the "Joint Statement on Rights and Freedoms of Students." Students are encouraged to familiarize themselves with this document which can be found in the Office of Student Affairs.

Most students find it relatively easy to adjust to the privileges and responsibilities of university citizenship. For those who find this process more difficult, the university attempts to provide such counsel as students need to gain insight and confidence in adjusting to their new environment. In some cases, when students are unable or unwilling to assume their social responsibilities as citizens in the university community, the institution may terminate their enrollment, or take whatever action is deemed necessary and appropriate.

The Rasmuson Library is part of the fine arts complex on the UAF main campus.

Academic Services

Each student will be held responsible for the applicable University of Alaska Fairbanks rules and regulations.

Academic Advising

UAF considers advising to be an integral part of the educational process; therefore, the objective of the advising program is to assist students in maximizing their responsibilities for their own academic program and in setting and achieving academic and postgraduate goals. Effective academic advising is perhaps the highest form of service that the individual faculty members can render to students and to UAF.

Degree and certificate candidates are required to have an academic adviser. Most of those students who have declared majors will be advised by the faculty in the department of the major. Undeclared students, those without majors, will be assigned advisers from the faculty at the UAF campus or unit where they are enrolled. Adviser consultation is desired before class selection is approved and registration is allowed for non-degree students who plan to enroll in more than nine credits or who have accumulated 30 UAF credits.

Advising Center — Fairbanks Campus

Undeclared students at the Fairbanks main campus will be advised through the Advising Center whose staff is made up of general advisers and faculty members from throughout the various disciplines. Since UAF recognizes the needs of students from different backgrounds, advisers will be available to assist transfer students, international students and rural students in addition to incoming freshmen and undeclared students. Although students are assigned to a specific adviser in the Advising Center, they have access to all members of the advising team and relevant department advisers.

Since UAF also recognizes that the key to a well-rounded education is the opportunity for exploration, the Advising Center, in cooperation with other departments, sponsors a myriad of informational workshops on such subjects as degree programs and career exploration as well as a wide range of social topics.

The goal of the Advising Center is to expedite the successful completion of a student's academic career.

Cable College

The School of Career and Continuing Education offers college-level credit and non-credit courses over television. These telecourses differ somewhat from traditional classes. A typical telecourse lesson requires the use of a study guide, textbook and television to complete assignments. Students communicate with the instructor and other class members over the telephone, audioconferencing, or through the mail. All of these activities, except audioconferencing, can be done at home. Some telecourses are enhanced by a classroom lecture.

Career Development Center

The center located at UAF's Downtown Center is a component of the School of Career and Continuing Education's Student Development and Learning Center. It specializes in providing support for adult students needing career advice. The center offers students resources to help in making career decisions, designing training programs and developing job search skills. Counselors aid students with career planning, pre-admission advising, program planning, personal crisis intervention and other concerns which affect successful program completion.

The center has a specialized library of occupational and educational information, a computerized career guidance system, selected software available for student use, and individual consultations at various stages of the career development process. The center assists students in gaining the information and experience needed for effective career planning, as well as the continuing process of career changes. The goal of the center is to assist students in identifying satisfying career choices based on a realistic assessment of themselves, accurate knowledge of the world of work and experience with ways to activate career plans.

Available both by appointment and on a walk-in basis, these services are free to enrolled and prospective students.

Computer Support Group

The UAF Computer Support Group (CSG) provides administrative and academic computing support for UAF and the GNOSIS Information Systems for the entire University of Alaska System. The UAF CSG is the primary UAF contact with the University of Alaska Computer Network, which provides extensive data communication and computing services to university units.

Most administrative computing is provided for the university by the UACN. The systems are run on an IBM 4381-14 computer configuration located in Fairbanks. Several administrative computing services are provided by UAF-developed and operated systems.

The UACN data communication backbone has been designed so that from any terminal users may access any host in the network on which they have resources. Using over 8,000 land miles of satellite and microwave communication facilities, the network spans an area 1,400 by 1,100 miles. Any member of the university academic community can request computer resources for a specific course or for independent study.

Primary academic computing support for UAF is provided through a Digital Equipment Corporation VAX 8800. This system is currently configured with 32 megabytes of main memory, 3.2 gigabytes of disc storage, 128 user-accessible ports, and the VMS operating system. Similar VAX systems are located at the university's Juneau and Anchorage locations, and are accessible through the UACN multiplexing and DECNET data communication facilities. The VAX 8800 is also connected to the BITNET data communication system, facilitating data transfer with several hundred other academic computers worldwide.

Developmental Studies

Developmental studies courses are offered to meet three types of needs. The first is to prepare individuals for admission to occupational-technical and university-academic programs. The second is to assist students who are already pursuing course work but are experiencing difficulties or would like to improve their efficiency. The third is to provide an opportunity for individuals who are interested in improving their skills in particular areas but are not necessarily enrolled in a program. The need for developmental studies may be determined through analysis of individual high school transcripts, test scores, other achievement data and discussion with counselors. Students may also elect courses within the developmental

studies program on the basis of self-prescription and personal need. There are three types of developmental studies courses: communication skills development, math skills development and general academic development. Course descriptions for developmental studies are found under Developmental English, Developmental Mathematics and Developmental Studies.

Elmer E. Rasmuson Library/Media Program

The university library, named in honor of pioneer Alaskan public servant, philanthropist and businessman, Elmer E. Rasmuson, moved into the library building in the Fine Arts Complex in the fall of 1969. A 69,616 square foot addition was completed in the summer of 1985. With the addition, and the remodeling of 22,000 square feet, the six-level library/media facility now totals 181,616 square feet of well-designed space. The library collection consists of more than 1,300,000 bibliographical items in a variety of print and audiovisual media, including books, periodicals and serial titles, government documents, microfilms, microcards and microfiches, archival documents and manuscripts, maps, photographs, phonograph disks, audiocassettes, videotapes and motion picture films.

The Rasmuson Library/Media Program furnishes academic and research support to UAF students, faculty and staff members, whether on campus or at one of the urban or rural centers. In addition, as the major research collection in the state of Alaska, the Rasmuson Library functions as a statewide resource for library collection development efforts, library automation, serials union listing, university publications distribution, Alaska information indexing and interlibrary loan transactions.

The Alaska and Polar Regions collections, include the world-class Alaska Collection, the university Archives and Manuscripts Collection, historical photographs, rare books, rare maps, and oral history materials.

The library is a participant in the Western Library Network (WLN), whose automated database contains more than 3,500,000 bibliographic records of more than 250 libraries located from Alaska to Arizona.

Interlibrary loan services are available to students and faculty members through the Information Access Services department. The library's membership in the University of Washington Library Resource Sharing Program and electronic mail systems make the resources of the larger university libraries in the nation quickly available to augment the resources available at UAF.

The Bio-Medical Library, located in the Arctic Health Research Building on the West Ridge, is a branch of the Rasmuson Library. Bio-Med collections number approximately 36,000 volumes, the majority of which are bound periodical titles. Journal titles cover the fields of the health sciences, microbiology, animal physiology, fisheries, veterinary medicine, plant pathology and the environment as it relates to cold regions research.

Evening and Weekend College

The School of Career and Continuing Education, in conjunction with other UAF colleges and schools, provides academic courses during evening hours and on weekends on the Fairbanks campus and at its off-campus locations. The alternative course schedules and delivery modes are designed to increase access for working adults and other students whose work, community, or family commitments preclude their participation in resident, semester-based programs. Some courses are enhanced through television instruction or computer-aided programs to permit students to progress at their own pace. Night and weekend courses are offered to allow the student working toward a Bachelor of Business Administration degree in UAF's School of Management or to fulfill the general university requirements for the Bachelor of Arts degree. SCCE also serves the non-degree seeking student with evening courses for general interest.

Honor Societies

The following honor societies are active at UAF.

Alpha Phi Sigma is the national honor society for criminal justice students. The society recognizes scholastic excellence by undergraduate and graduate students in the criminal justice sciences. Its purpose is to recognize scholastic achievement and excellence; to encourage research and the dissemination of knowledge gained from research; to inspire pride in their work, and to apply scientific practices and techniques within the criminal justice fields. Students must rank in the top 35 percent of their class to be eligible.

Psi Chi is the national honor society in psychology. Psi Chi's purpose is to advance the science of psychology and to encourage, stimulate and maintain scholarship of the individual members in all fields. To be eligible, students must rank in the top 35 percent of their class.

Phi Kappa Phi is a national honorary society which recognizes outstanding scholarship in all fields of study. New members are elected by the local chapter. Undergraduates are selected from the top 10 percent of the senior class and the top 5 percent of the junior class. Graduate students are selected on an individual basis from among the top 5 percent of all graduate students, and faculty are selected individually after nomination by a member of the local chapter.

Sigma Xi is an honor society for scientists. Its goals are to advance scientific research, to encourage companionship among all scientists, and to assist the wider understanding of science. Recent graduates and others who have shown their potential ability in research are elected as associate members. When that potential has been realized in publications, patents, or other research achievements, scientists are eligible for full membership.

Tau Beta Pi was founded in 1885 to recognize outstanding students in engineering, and nationally there have been over 300,000 initiates in 196 chapters. The UAF chapter was chartered in 1975, and to date more than 200 members have been initiated. Membership is open to engineering majors of good character, who are in at least their third semester at UAF, and who are academically in the upper one-fifth of the senior class, or the upper one-eighth of the junior class.

Honors Program

The Honors Program at UAF seeks to provide superior undergraduate students with intellectual opportunities beyond the scope generally found in the lecture halls of a university. These opportunities include smaller classes, direct contact with top faculty members and greater curriculum flexibility which allows students to strike out on their own in intellectual pursuits.

The UAF Honors Program is based on the convictions that genuine excellence in college-level studies means broad competence in areas outside a student's major field of specialization as well as excellence within it.

Eligibility

Undergraduate students from all disciplines are eligible for admission to the Honors Program. To qualify, new freshmen must have attained a high school grade point average of no less than 3.50, a composite ACT score of no less than 27, and no individual ACT score of less than 23. Sophomores applying to the program must have a cumulative college GPA of 3.50 and clear admission to UAF.

Admission to the Honors Program is generally in the fall semester, with applications on file by April 1 of the year applying. Late applications will be considered on a space available basis. A limited number of students may be accepted at mid-year. Credentials for admission to the university must be filed separately and should be forwarded to the Office of Admissions and Records at the same time.

Program Features

Students in the program must be regularly enrolled full-time undergraduate students. In order to graduate with the

designation of "Graduation with University Honors," students must complete 27 credits of Honors work plus a senior Honors thesis.

Honors courses are offered in all disciplines and include courses specifically designed for the Honors Program as well as special enriched sections of standard university courses. The Honors Program also offers opportunities for students to do individualized study in their majors.

A typical semester's offering in the Honors Program would include two sciences, a calculus course, English composition, two or more courses from the social sciences and humanities plus one or more courses from business, engineering science, education, etc.

A Summer Honors Reading course is offered each year.

For more information and application forms write to: The Honors Program, P.O. Box 900120, University of Alaska Fairbanks, Fairbanks, Alaska 99775, or telephone the Honors House, 515 Copper Lane, (907) 474-6612.

International Programs

The International Programs Council was established in 1984. One of its purposes is to promote a mind set of global thinking—an understanding and appreciation of the history, society, culture and institutions of other nations. Alaska is geographically a world crossroads. Our closest partners are nations of the Circumpolar North and Pacific Rim.

International Programs promotes and supports university programs of instruction, research and public service. For students, International Programs develops and encourages international study programs. It has initiated international student exchange agreements with a number of foreign institutions in the Circumpolar North, Pacific Rim and western Europe.

Detailed information on exchange programs listed below is available from Jean S. Aigner, Director, International Programs Council, 331 Signers' Hall, University of Alaska Fairbanks, Fairbanks, Alaska 99775, (907) 474-5327, VAX FYIPC.

Gifu University, Gifu, Japan — Gifu is a national university which provides undergraduate training in Japanese language and culture to students with minimal or no language background, and graduate training in several fields, such as engineering sciences. Summer programs to Gifu University are available to students with no prior langugae training.

Nagoya Gakuin University, Nagoya, Japan — This is a private university which provides training in Japanese language and culture to students with at least one year of Japanese language training.

Hokkaido University, Sapporo, Japan — This university is geared especially to graduate training, but also provides Japanese language training to students (preferably with previous Japanese study); there is also a summer program available.

Heilongjiang University, Harbin, Heilongjiang Province, People's Republic of China — This is a comprehensive, provincial university providing language training to students, preferably with some background in Chinese.

University of Copenhagen, Copenhagen, Denmark — This is a state-supported comprehensive university which offers intermediate and advanced Danish language training to students with a year of study at UAF and course work in other fields to students with language competency.

McGill University, Montreal, Quebec, Canada — McGill is a private comprehensive university offering course work in English to undergraduate and graduate students. McGill is particularly known for its medical school; it has an active Northern Studies program for undergraduates.

In these exchanges, students enroll full time at UAF but take course work at the foreign institution. Students are responsible for transportation, housing, food and incidentals at the host institution. Please note that academic schedules are not all similar to UAF's.

UAF belongs to **NICSA (Northwest Interinstitutional Council on Study Abroad)**, a consortium of universities in the Pacific Northwest, through which students have an opportunity for study-abroad programs in London and Bath, England; Avignon, France; Cologne, Germany; and Siena, Italy.

Courses are available in the humanities and social sciences as well as foreign languages. Program costs of approximately $3,000 per term include tuition and books, room and board with a family, public transportation passes, and excursions that are integrated with the courses. Students are eligible to use the Alaska Student Loan Program for these study-abroad opportunities. Students must have at least sophomore standing, and there is a one-term foreign language prerequisite for Avignon and Cologne. The adviser for these programs is Dr. Vincent Pelletier, Department of Foreign Languages and Literatures, 608 Gruening Building, University of Alaska Fairbanks, Fairbanks, Alaska 99775, (907) 474-7396.

International Student Advising

The International Student Adviser assists students who are not citizens of the United States with problems they may have in adapting to American/Alaskan culture and adjusting to the unique characteristics of American higher education. Additionally, the International Student Adviser is responsible for issuing the form I-20 needed to obtain a student visa and acts as a liaison between the foreign student and the U.S. Immigration and Naturalization Service.

Military Education Programs

UAF's School of Career and Continuing Education is a Servicemen's Opportunity College Associate Degree (SOCAD) member school. SOCAD allows Army personnel and dependents to finish associate degree programs without losing credits as they transfer to different locations during their military careers. In support of the Community College of the Air Force (CCAF), SCCE also offers a full spectrum of courses at Eielson Air Force Base.

Rural Student Services

In response to the needs of students from rural areas of Alaska and students whose cultural background is different from that of the majority of the campus student body, UAF has developed a program called Rural Student Services. The primary concern of this program is helping the student make the transition from a small-school and rural environment to the complexities of university life. Assistance is provided to new students by helping with the necessary forms and paperwork needed to attend the university, providing academic advising, career guidance, personal counseling and student advocacy. The program is especially responsive to the needs of the Alaska Native student.

Rural Student Services offers a place for the student to seek counseling, information and tutoring, and coordinates services to rural students with various university departments. The program offers help and advice to the student. Entering freshmen may choose to use RSS staff members for academic advisement. A lounge is open for students and faculty in which they may relax and visit.

Recruitment activities in rural Alaska, as well as special strategies developed in conjunction with rural schools to better prepare students for college, are an emphasis of Rural Student Services.

Special Continuing Education Programs for Small Businesses

The School of Career and Continuing Education is a Sub-Center of the Statewide Small Business Development Network offering individualized business counseling and support.

The Small Business Development Center coordinator works with clients to identify specific problem areas which he can help solve. The current resources library of the Small Business Administration publications includes a variety of business management books for loan to clients. For more information

about SBDC services, workshops or adviser training, call 456-1701.

The school also serves the business community through its Business and Entrepreneurship Development Program. Business owners, managers and employees take advantage of special seminars and workshops which provide instruction in the key areas of entrepreneurship and business management. Staff development workshops are also designed to meet the specific training needs of individual companies, organizations and industry groups.

Student Development and Learning Center

The Student Development and Learning Center is located in the UAF Downtown Center with satellite sites at the Hutchison Career Center and Moose Creek Center. The task of the center is to provide services to students and the public that contribute to a successful learning experience or career transition. The center has three components: the Learning Center, career and academic counseling and developmental studies. SDLC services are available by appointment and on a walk-in basis. A series of student success workshops are sponsored by the SDLC on a variety of topics in the areas of study skills, career development and personal development. These workshops are available to students and members of the community at no charge. For more information, contact the School of Career and Continuing Education.

Summer Sessions

A wide variety of academic programs are offered to residents and visitors during the summer. Summer classes are open to candidates for graduate or undergraduate degrees and to unclassified students wishing to take special courses without reference to degree objectives. Numerous courses and workshops are available throughout the summer. Students may choose from teacher-oriented course work, cross-cultural education, arctic-oriented studies, computer workshops, and field experiences in areas such as anthropology, biology, fisheries, geology, marine sciences and wildlife management. Additionally, basic degree requirements and courses heavily enrolled in during the fall and spring semesters are often available during the summer terms.

Summer Sessions faculty include members of the regular teaching staff, supplemented by outstanding visiting instructors. For more information contact the Director, Summer Sessions, Signers' Hall, University of Alaska Fairbanks, Fairbanks, Alaska 99775-1540, (907) 474-7021.

Tutoring Services

ASUAF tutoring provides subsidized tutorial services for individual courses on request. Please contact the student government for more information.

The **Learning Resource Center** is located at the UAF Downtown Center, with satellite centers at Hutchison Career Center and Moose Creek Center. LRC staff help students improve and expand skills needed to be successful in university classes. The center provides individualized instruction and tutoring in mathematics, writing, reading, grammar, spelling and study skills.

The LRC staff will help students identify their problem areas in courses and assist in developing personal study plans/skills. Students may choose to work with course materials or LRC resources.

A variety of learning options are available, including tutoring, lab courses, workshops, independent and small group study and computer assisted learning programs. Students may use the audiovisual aids, typewriters, computers, quiet study carrels and other resource materials. For more information, contact the School of Career and Continuing Education.

The **Math Laboratory** provides flexible hour assistance to students currently enrolled in mathematics courses. The lab is coordinated by faculty and services are provided by graduate students. Regular workshops for students with math anxiety are offered. For more information contact the math department.

The **Writing Center** is staffed by English department graduate students and upper class English majors. It is open Monday through Friday and is available to all enrolled students. The staff helps students improve their general grammar usage and writing techniques. They also provide critical reviews of student writing projects during the successive draft process. For more information, contact the English department.

University of Alaska Museum

The University of Alaska Museum is a center for the collection, preservation and dissemination of information pertaining to the north. The museum has a staff of coordinators, curators, technicians and student assistants to collect, preserve, exhibit and interpret the cultural and natural history of Alaska.

While some 100,000 people visit the exhibit area each year, the museum is more than a place to look at interesting objects. The museum is also a research center, and the staff conducts field work, teaches university courses and publishes reports. The University of Alaska Museum administers a full range of public service and educational programs. Public lectures, children's programs and museum-related workshops are offered throughout the year. An interdisciplinary display of objects and information from the museum's collections provides a unified view of Alaska's peoples, natural resources and events which have guided the development of the state.

The Aquatic Collection, established in 1970, contains over 44,000 specimens of aquatic invertebrates, fishes and algae. The research effort of the curator is directed toward a basic inventory of Alaska's marine flora and fauna. This inventory is often used as a basis for environmental impact assessments.

The Archaeological Collection contains approximately 1.5 million specimens, primarily from Alaska. Additional comparative exchange collections are available for study from other regions of North America, South America, Asia and Europe. The curator and professional staff conduct research encompassing state, national and international archaeology. A laboratory and support facilities are maintained for students, faculty and visiting scholars for conducting archaeological research.

The Ethnographic Collection contains over 14,000 objects made and used by Alaska Native people from the turn of the century to the present. Exceptional artifacts include baskets, beadwork, ivory carvings, masks, games and toys.

The Art Collection consists of approximately 700 paintings, lithographs and prints of Alaska subjects dating from the late 19th Century to the present. The works of Laurence, Ziegler, Heurlin, Lambert, Machetanz and Crumrine are well represented.

The Herbarium preserves and systematically stores plant specimens. It consists of over 112,000 specimens. These collections represent the United States, Scandinavia, Finland, Greenland, Canada, Japan and the Soviet Union, which provide data for comparative studies.

The Geology Collection includes minerals, Alaskan ores, cores and other geologic samples, and Alaskan gold.

The Tephrachronology Center includes holdings in arctic volcanic ash samples.

The Terrestrial Vertebrate Collection has 5,300 bird study skins and over 25,000 mammal specimens of skins, skulls and skeletons, representing most of Alaska's bird and mammal species. The collections are strongest in gamebirds, furbearers, sandpipers, passerines and rodents.

The Alaska Native Heritage Film Project produces films that document Alaska culture for instruction and public education statewide. The films are made using an approach developed by the project call "Community-Determined Film Making," in which the communities and individuals filmed play key roles in determining the content and direction of the films.

Six undergraduate courses in Museum Studies are available through the Museum Studies Program.

The **Alaska Quaternary Center,** established in 1983, is a campus-wide interdisciplinary organization based in the University of Alaska Museum. The Quaternary Epoch spans the most recent two million years of earth history, and the Alaska

Quaternary Center is concerned with the historical dimension of the natural and social sciences, and especially with the history of Alaska's climate, landscape, biota and people during that period. The AQC stimulates, enhances and helps coordinate the university's wide range of research and instruction on Quaternary topics and develops new programs and research activities on those topics. Thus, the AQC provides a focus for a consortium of scientists, students, individuals and agencies interested in northern Quaternary studies.

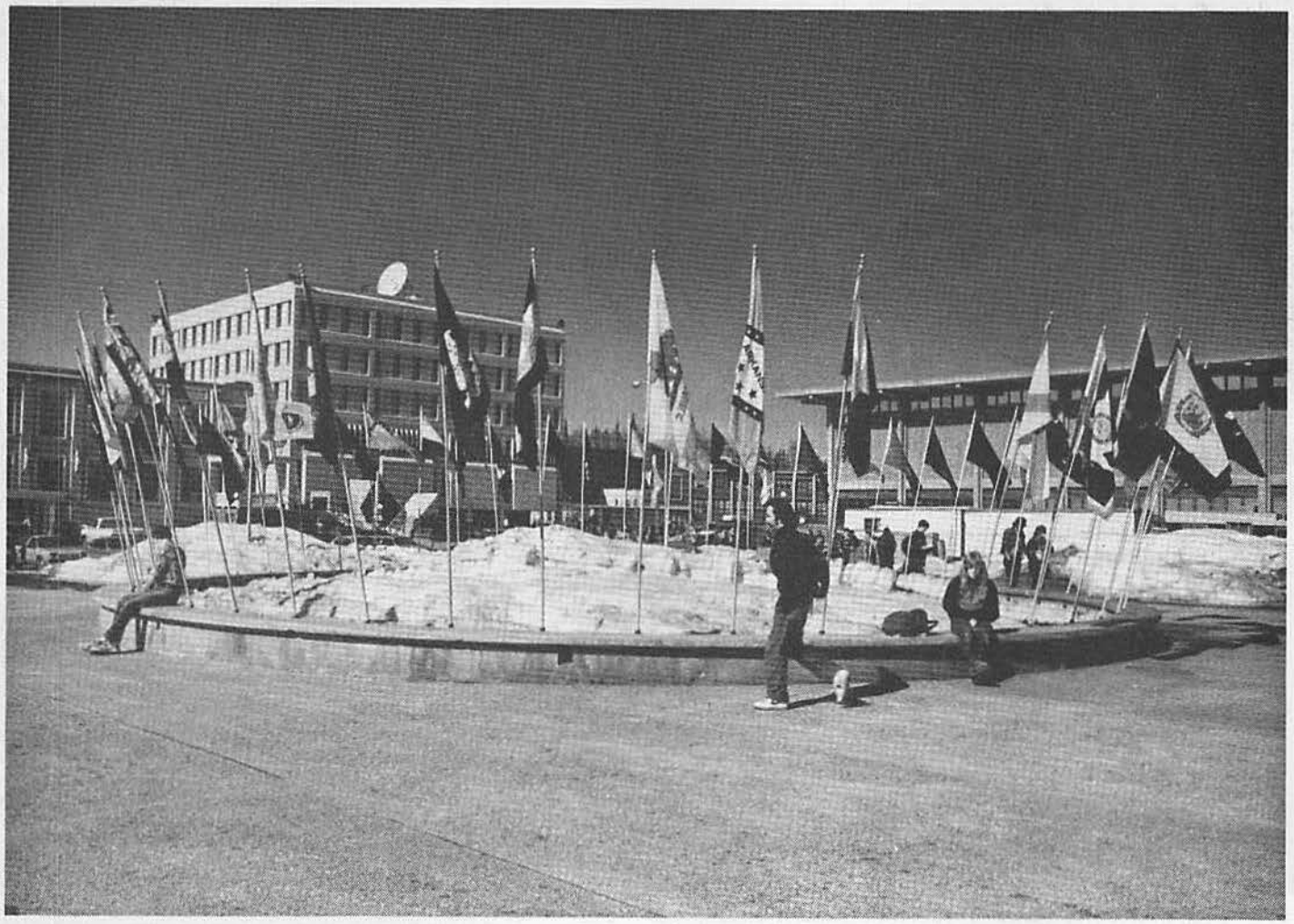
Veterans' Training

The university is approved for veterans' training in degree and certificate programs. Although UAF does not have a veterans' office on campus, counseling is available through the Veterans' Administration. At UAF, veterans class attendance and academic progress are monitored to ensure compliance with VA policies.

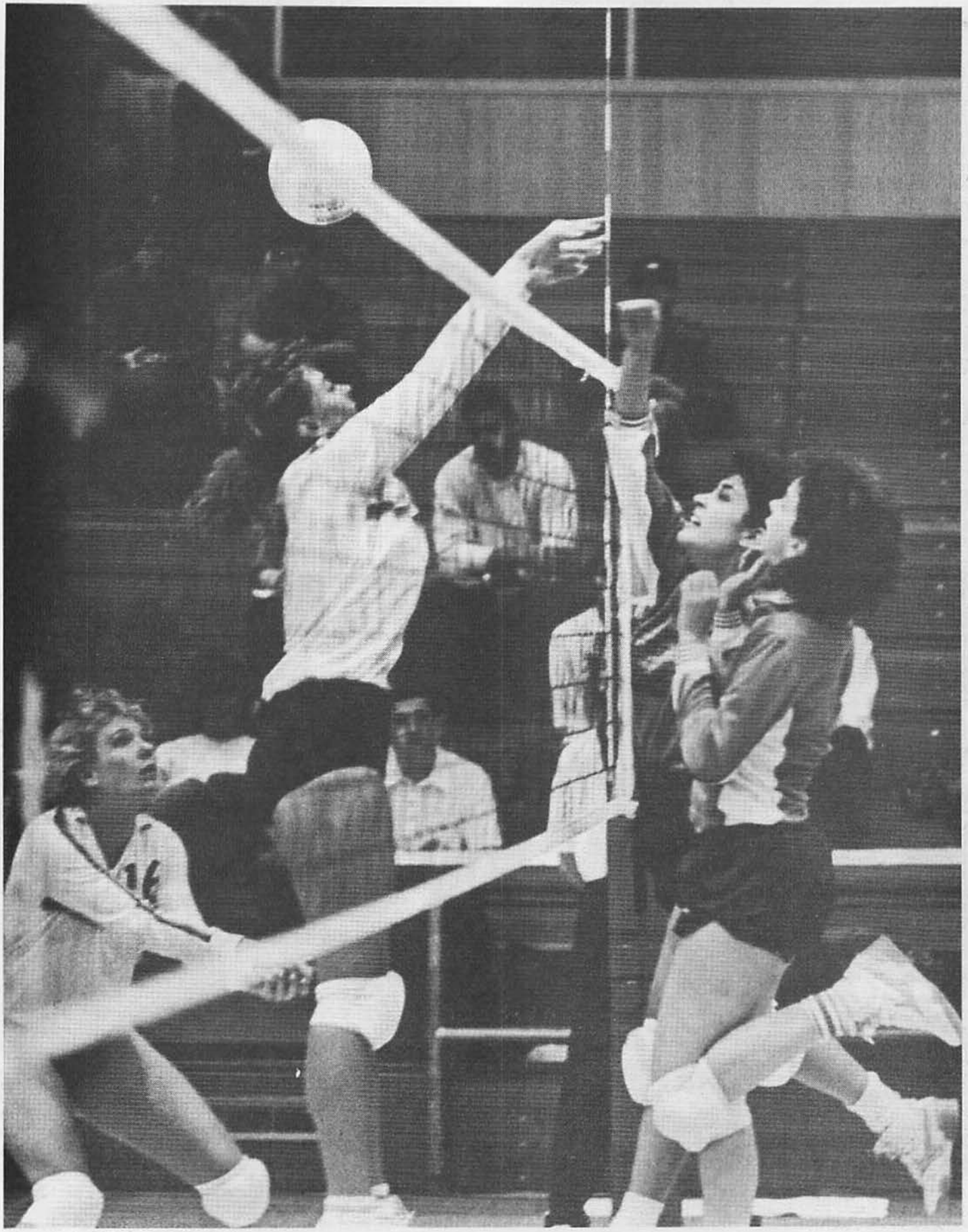
Students interested in general information about educational benefits may contact the UAF Office of Admissions and Records.

Western Undergraduate Exchange

UAF participates in the Western Undergraduate Exchange administered by the Western Interstate Commission for Higher Education (WICHE). Reduced tuition rates, the instate tuition plus 50 percent of that amount, are charged for residents of Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, North Dakota, Utah and Wyoming in programs in virtually all undergraduate fields at UAF. Contact the Graduate School office or WICHE Student Exchange Program, Drawer P, Boulder, CO 80301-9752 for more information.



State and national flags, which fly in the Plaza of the Flags on the UAF main campus, represent student home states and countries.



A Lady Nanooks volleyball player spikes the ball during a game against the University of Northern Colorado.

Student Services

Extensive cultural and recreational programs, special events and student organizations serve the interests and needs of students. The Patty Athletic Center contains a main gymnasium, rifle range, handball/racquetball courts, swimming pool and conditioning equipment. Wood Center, with its ballroom, lounge, cafe, snack bar, meeting rooms, pub, student government offices and bowling alley, is the focus of various out-of-class activities for students and faculty. Intercollegiate athletics include basketball, rifle, cross-country running and skiing, volleyball and ice hockey.

Alaska Teacher Placement

Alaska Teacher Placement (ATP) has been designated as Alaska's statewide clearinghouse for educational placement. ATP assists Alaska's public school districts with the employment of educators for their schools.

Educators from Alaska, other states, and around the world register with ATP. When job listings are received at ATP, they are referred to registrants who meet the school districts' endorsement requirements. During the summer when school district personnel are on campus interviewing educators, registrants often come to Fairbanks to be available for interviews. ATP also sponsors spring and summer education job fairs.

Permanent Placement files for UAF education majors are maintained by ATP.

Contact Alaska Teacher Placement by writing, dropping by the office, or calling. ATP is located in the Moore-Bartlett Complex, 732 Yukon Drive, Fairbanks, Alaska 99775-1550, (907) 474-6644.

Alumni Relations

The UAF Office of Alumni Relations is located in 201 Constitution Hall. The university supports its alumni in many ways. UAF provides the Alumni Association with staff support for its publications, board meetings and elections, scholarship administration and special projects. The Alumni Association, in return, supports the university through contributions of time and money. The efforts of the UAFAA are aimed at providing assistance to the university and its students and faculty. If you have questions or comments, call the Alumni Relations Office at 474-7081.

Athletics and Recreation

Interested students may participate in supervised intramural and intercollegiate athletics, or in unsupervised, open recreational and fitness activities in the Patty Center and adjacent areas. The intramural program offers activities for men and women in more than 40 team and individual competitions each year.

The Patty Center has multipurpose areas which allow participation in badminton, basketball, calisthenics, dance, gymnastics, handball, swimming, fencing, racquetball, volleyball, water polo, wrestling, jogging, judo, karate, paddleball and weight training. While the Patty Ice Arena offers year-round ice skating and hockey activities, the fields to the west of the ice complex offer softball and soccer playing areas. University trails are available for cross-country running and skiing, including a lighted ski trail.

The UAF Nanooks intercollegiate athletic teams participate at the Division II level in men's and women's basketball, men's and women's cross-country skiing and running, co-ed rifle and women's volleyball. The men's ice hockey team participates at the Division I level. Students who are interested in trying out for any of these teams should contact the appropriate coach.

Career Planning and Placement

Career Planning and Placement offers students and alumni a variety of services. Ideally, upon entry to the university each student should continue to develop lifestyle and career goals. In cooperation with faculty and advisers, the staff in Career Planning and Placement works with any interested student to ensure a well-planned academic program, developed to maximize successful attainment of the student's life and career goals. The Career Planning and Placement staff offers counseling assistance, provides a variety of career information and assists the student in finding summer jobs, and in some cases academic internships, which help toward employment after graduation.

Students are encouraged to make use of the various job hunting aids available at the center. These include placement files, tips on writing a resume, help in preparing for interviews and information on current job openings. Each year many employers visit the campus to recruit students and alumni. The Career Planning and Placement office coordinates this activity. Many employers place job openings with Career Planning and Placement and an attempt is made to match the needs of the employer with those of the students and alumni making use of the center.

Center for Health and Counseling

Once health was viewed as merely the absence of physical illness and it was seen as the responsibility of health professionals. Now health is viewed as a positive growing condition of the total person and people take more responsibility for their own health.

Preventive, educational, diagnostic, and remedial medical and psychological services are offered by the center staff, as well as student health insurance claim processing services.

Medical Services — Outpatient service is provided by full-time registered nurse practitioners and a physician. The primary care benefits that you receive by paying the health fee include all routine office care or outpatient services including family planning and immunizations.

Diagnostic services including laboratory procedures are available at the health center. The health fee does not cover the "Pap" test or some other routine examinations or the cost of medications, but these are available on a fee-for-service basis. X-ray services are not available on campus, but are available at any of the medical care facilities in Fairbanks.

Personal Counseling — Counseling is a process that allows individuals to explore their own personal feelings, doubts and problems without being judged, evaluated or pressured. The counselors often provide students with methods to change habits, manage stress and gain more control over their lives. The counseling staff believes in the idea that one does not need to be sick in order to get better. Counseling occurs with individuals, couples, with families or within small groups of concerned students. These counseling interactions are kept confidential.

Disabled Students

Curb cuts and ramps have been installed at UAF to make it easier for everyone to traverse the campus. Most campus buildings contain accessible restroom facilities and elevators; the library and museum are accessible and the swimming pool is

equipped with a hydraulic lift. Skarland Hall provides special living accommodations and is connected to two other residence halls by an indoor concourse.

It is the university's policy to make all programs and activities readily accessible through relocation of classes and activities whenever possible, with reasonable structural modifications, or by other means for qualified disabled students. Contact the Coordinator of Services for Disabled Students, Center for Health and Counseling, University of Alaska Fairbanks, Fairbanks, Alaska 99775-0440, (907) 474-7043 or 504 Coordinator, 101 Eielson Building, University of Alaska Fairbanks, Fairbanks, Alaska 99775-5320, (907) 474-7919.

Financial Aid, see Financial Aid section

New Student Orientation Program

Prior to registration each semester (fall and spring), Early Orientation for New Students (EONS) is offered to all new students. Materials concerning this program are forwarded to students two months before the semester begins. This helpful activity is designed to assist students with their adjustment to collegiate life by providing essential information about the university's programs and services. Attendance at EONS is strongly advised.

At the beginning of each semester, a special orientation program is provided for adults who are considering pursuing college studies after an absence from formal education. This program is sponsored by ADRES (Adult Re-Entry Services), which is located within the Career Planning and Placement Office. Students who attend the adult student orientation do not need to attend EONS.

Journalism and broadcasting students Elaine Murray and Vern Irvine practice at the controls of UAF's public television station, KUAC-TV.

Public Service

Located on the University of Alaska Fairbanks campus are numerous public service resources, which perform public service functions in Alaskan communities. Several state and federal agencies also have offices on the Fairbanks campus.

Alaska Native Human Resource Development Program

The Alaska Native Human Resource Development Program (ANHRDP), a program in the Rural College, was created by the university in consultation with Alaska Native leadership to respond to the numerous training needs associated with the implementation of the Alaska Native Claims Settlement Act (ANCSA). As an advocate of change and innovation within the university system, ANHRDP implements a specialized, planned response to the particular needs and unique characteristics of Alaska Natives. ANHRDP promotes a two-way exchange of information and knowledge between Alaska's indigenous people and the university. Current projects and activities of ANHRDP include: spirit camps and traditional health practices, ANCSA-related courses, computer courses and technical assistance, and Alaska Native leadership training. Past efforts have included development in business management, land and resource management, and organizational management for ANCSA village corporations.

Alaska Sea Grant College Program

Established in 1970, the Alaska Sea Grant Program represents a partnership between the National Sea Grant Program within the National Oceanic and Atmospheric Administration and the University of Alaska. Its purpose is to provide people with the knowledge and means of developing, utilizing and conserving the marine resources of the state and nation through a program of teaching, research and advisory activities.

The Alaska Sea Grant Program administrative office is housed in the Irving II Building on the Fairbanks campus and is administered through the new School of Fisheries and Ocean Sciences. Sea Grant-funded projects can be carried out in cooperation with institutes and units on the various college campuses throughout the state.

The research program includes projects in fisheries oceanography, fisheries sciences, fisheries enhancement, fisheries allocation issues, food science and technology, and aquaculture.

Sea Grant supports continuing programs of information and advisory services. The Public Information Services project, housed within Sea Grant's administrative office, issues a wide variety of publications including scientific research reports, advisory bulletins and conference proceedings; coordinates statewide and national workshops and conferences on important fisheries and marine topics; and creates displays and exhibits for use at fairs and trade shows. Through the Alaska Marine Advisory Program, Sea Grant supports a personal link with marine industries and coastal communities through workshops, lectures, conferences and individual problem-solving.

Alaska Sea Grant's support of education includes graduate and undergraduate studies and stipends at universities in Alaska.

Conferences and Institutes

Conferences and Institutes is the University of Alaska Fairbanks' conference management center. C&I has a major role in carrying out the university's commitment to public service by providing educational programs in a conference/institute format. It facilitates the dissemination of information, ideas, and knowledge, and facilitates collegial contacts, multidisciplinary interaction, and public dialogue. It assists government, business, and industry groups—as well as university departments—in planning and conducting gatherings from brief educational meetings to sophisticated technical institutes. For these gatherings, C&I offers a continuum of services from program development through logistics management. C&I also serves to coordinate with all off-campus groups desiring to use on-campus facilities for educational programs.

Conferences and Institutes offers educational programs which are local, statewide, national or international in scope. Locations throughout the state are chosen to best suit the needs of each educational activity. Conferences and Institutes' educational programs complement the educational goals of the university.

Educational programs originate through requests from federal, state and local governmental agencies, service organizations, university faculty and staff, professional organizations, and through the department's assessment of educational needs which can be best met through the conference, institute, seminar, or workshop/meeting format.

For more information, contact UAF Conferences and Institutes, 117 Eielson Building, Fairbanks, Alaska 99775, or call (907) 474-7800.

Cooperative Extension Service

The program is a cooperative educational service of the university and the U.S. Department of Agriculture. The broad purposes of the service are to provide informal education to residents of the state. Extension field offices are located in Fairbanks, Palmer, Juneau, Homer, Ketchikan, Soldotna, McGrath, Sitka, Delta, Kodiak, Anchorage, Nome and Bethel. University extension specialists and district extension agents extend the results of research by the university and a broad range of research institutions to the public. Local people are helped to identify and solve problems and to apply the results of scientific research to the improvement of businesses, homes and communities. Work with young people is conducted through the 4-H and Youth programs.

Audiences for extension programs include both rural and urban residents. Extension educators serve the consumer, as well as resource production, marketing, and agri-business. Extension educators help citizens of the state to plan and organize for broader economic and social development. Their teaching is carried out informally through television, radio, newspaper and newsletter media, publications, business, home and community visits, special interest meetings and short courses.

KUAC

UAF pioneered public broadcasting in Alaska, and now holds the licenses for KUAC-FM and KUAC-TV. In 1962, the university introduced KUAC-FM. It was the first public radio station in Alaska, the first FM station in Fairbanks, and a leader in satellite communication, delivering same-day news and information to the 49th state, for the first time ever. Today, KUAC-FM, Stereo 104.7 provides a vital link for about 8,000 listeners in Interior Alaska. In 1971, the university acquired the

license for the first public television station in the state, KUAC-TV, Channel 9, now watched by more than 40,500 people each week. As members of the National Public Radio, the American Public Radio, the Alaska Public Radio Network, and the Public Broadcasting Service, the Pacific Mountain Network, and the Public Television Network of Alaska, KUAC-FM and KUAC-TV feature national public broadcasting programs. But each station enhances its schedule with locally produced programs emphasizing Alaskan cultural, public and political affairs. All programs are selected on the basis of their quality and their service to education and the arts.

The facilities used to produce the local programs also provide a laboratory for UAF students in the Department of Journalism and Broadcasting. Students are encouraged to gain hands-on experience, and many pursue internships and part-time employment at the stations, located in the Fine Arts/Theater building.

In partnership with UAF, KUAC offers a variety of broadcast courses. These college credit courses, broadcast over television and radio, allow the convenience of attending college without leaving home or office. Under the supervision of a faculty member, each course revolves around a series of television or radio programs and is accompanied by textbooks, study guides and other materials. Since 1982, KUAC has broadcast telecourses in sociology, earth sciences, psychology, economics, English, political science and aviation.

Through public radio and television, UAF has increased the scope of its educational and public service activities far beyond the campus in Fairbanks.

Marine Advisory Program

The Marine Advisory Program (MAP), the marine arm of the Cooperative Extension Service, also works closely with the Alaska Sea Grant College Program and is academically affiliated with the School of Fisheries and Ocean Sciences. MAP seeks to interpret and extend relevant and current knowledge in fisheries and marine resources to Alaskan adults, youth, families and community leaders in an understandable and usable form, and to encourage the application of such knowledge to solve important problems and challenges. MAP has faculty and staff distributed throughout the coastal area of Alaska, with specialists located in Anchorage, Juneau and Kodiak and extension agents in Cordova, Dillingham, Homer, Kotzebue, Petersburg and Sitka. Through its work the Marine Advisory Program contributes to the public service mission of the University of Alaska Fairbanks.

State and Federal Agencies

The following is an alphabetical listing of the state and federal agencies located on the Fairbanks campus.

Branch of Alaskan Geology of the U.S. Geological Survey — This branch conducts a program of geological exploration and research in Alaska. Some of the functions are geologic mapping studies and evaluation of metallic, non-metallic, 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 for public use in the office.

Bureau of Mines, U.S. Department of the Interior — The Alaska Field Operation Center, with headquarters at Juneau, maintains a field office in the O'Neill Building. The field office provides support for the center's primary concern for mineral resources and environmental development. The functions that relate to this concern include surveillance and evaluation of industrial and commercial outlook for minerals and fuel deposits; studies to determine the relationship of mineral supply, demand and technology to the national economy; studies and projects concerning the relationship of the mineral industry to environmental problems; and engineering studies regarding effective mining practices.

The field office responds to diverse inquiries from the public and governmental agencies relating to mineral resources and environmental problems; assists in the monitoring of research projects that are conducted by the Mineral Industry Research Laboratory for the Bureau of Mines through contracts with the University of Alaska Fairbanks and maintains liaison with local federal and state agencies in regard to efforts of mutual interest.

College Observatory — The College Magnetic and Seismological Observatory is operated by the Branch of Global Seismology and Geomagnetism of the U.S. Geological Survey, with the main facility on the West Ridge of the Fairbanks campus and an outpost facility near Farmers Loop. Originally constructed in 1947, the observatory has expanded to 30 buildings and operates various instruments that continuously gather data for studies in the fields of geomagnetism and seismology. 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. Operation of the seismic equipment dates back to 1935.

In 1973 the observatory was transferred from the National Oceanic and Atmospheric Administration of the Department of Commerce to the U.S. Geological Survey of the Department of the Interior. The general mission of the observatory is to produce accurate and comprehensive data in the field of geomagnetism and seismology and 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. The facility plays a major part in keeping the people of interior Alaska informed of current earthquake activity and informing scientists and organizations of the occurrence of major world magnetic events. The observatory also operates the Barrow Observatory at Barrow, Alaska.

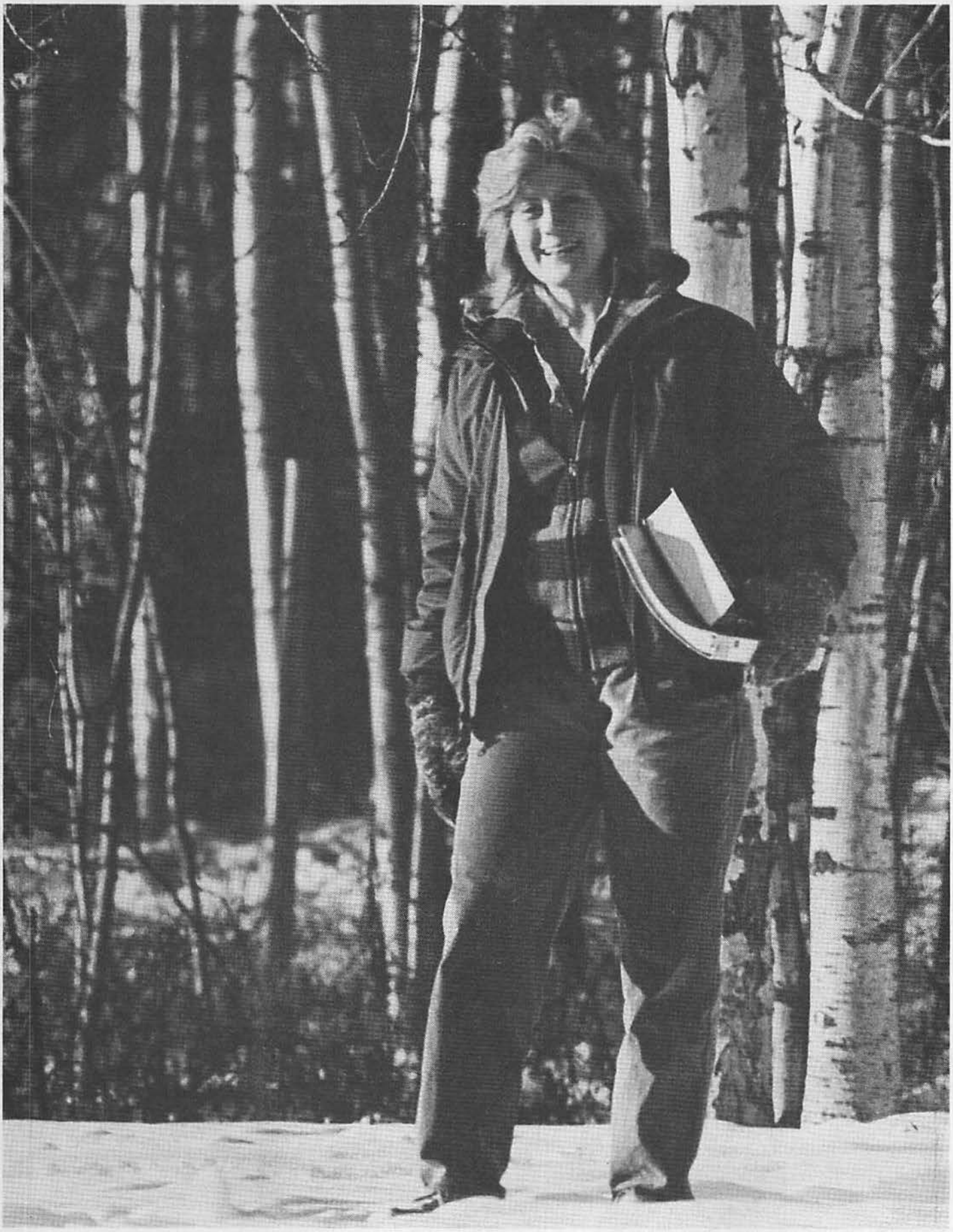
Institute of Northern Forestry, U.S. Department of Agriculture — The institute is a unit of the U.S. Forest Service, Pacific Northwest Forest and Range Experiment Station. Research is focused upon understanding the ecology of, and developing methods for managing, Alaska's boreal forests. Programs are underway to determine the succession of boreal forests and the effects of fire on soil, water, flora and fauna. Field work is conducted throughout the boreal forests in Alaska. The 12,500-acre Bonanza Creek Experimental Forest and the 26,000-acre Caribou-Poker Creeks Experimental Watershed provide convenient research locations for Forest Service and university scientists.

State Division of Geological and Geophysical Surveys — As part of the Alaska Department of Natural Resources, this division conducts cooperative investigations with university personnel and government agencies to contribute to the knowledge of Alaska's natural resources. The staff includes archaeologists, data processors, engineering geologists, geochemists, geologists, geophysicists and hydrologists.

The laboratory provides analytical services to the staff and also conducts independent research. Field programs are carried out by the scientific staff. Technical information and advice are available to prospectors, exploration companies and the general public. A variety of technical reports and maps are available for sale and for free.

Transportation Research Laboratory — The Alaska Department of Transportation and Public Facilities operates a research laboratory in conjunction with the School of Engineering. The university and the department jointly purchase equipment and share laboratory facilities. Engineering faculty and students are involved in research projects which include highway, airport and public facilities design, construction and maintenance, and marine transportation issues. Graduate student thesis projects often involve Department of Transportation and Public Facilities topics.

Virology-Rabies Unit, Alaska Division of Public Health — The Northern Region Laboratory provides viral diagnostic service for the entire state of Alaska. In addition, this office is involved with limited and applied research into both human and zoonotic viral diseases.



Arna Dan Isacsson, a student from Sweden, makes her way to a biology class.

Senior geology major Craig Schneider, and senior geophysics major Gina Cruse, lead a group of summer geology field camp participants to the top of Miller Mountain in the Alaska Range.

Graduate School

Programs of Study

As a comprehensive land-grant and sea-grant institution, UAF offers graduate degrees in a wide range of academic disciplines. UAF is an exceptional institution in areas related to our unique location. The expertise of UAF scientists and scholars is anchored along the northern edge of the Pacific Rim and extends around the circumpolar north. Although UAF is a small and young institution, it maintains a standing among the top 100 universities in the country in terms of total expenditures for research.

UAF is the only doctoral-granting institution in the state, and doctoral programs are offered in the areas of anthropology, atmospheric sciences, biology, geology, geophysics, mathematics, oceanography, physics, space physics and wildlife management. Master's degrees are offered in over 50 fields: in the humanities, social sciences, computer science, physical and natural sciences, and in professional fields such as engineering, education, and business administration. Interdisciplinary programs are possible for exceptional students who have a research focus in areas in which UAF has faculty expertise and research facilities. See the list of graduate degrees on the following page, and consult the UAF Graduate Catalog for details on each of the graduate degree programs.

Financial Aid

Teaching and research assistantships of $7,600 to $8,360 for the school year are available through departments, and assistantships are sometimes available for summer. Non-resident tuition is waived for all graduate assistants. The Financial Aid office oversees student loans and work-study programs, and the University of Alaska Foundation administers scholarship programs. Applications for financial aid are due by February 15 for the fall semester, and many departments make assistantship decisions early in the spring. Contact the department or program in which you are interested, for deadline dates and required application information.

Cost of Living

Campus housing available to graduate students includes residence hall accommodations ($520 to $720 per semester) and family housing apartments ($250 to $590 per month); housing scholarships may be available. The cost of living in the Fairbanks area is generally higher than the national average.

Student Group

There are about 600 graduate students at UAF. About 40 percent of the graduate students at UAF are women, and about 55 percent attend part time. Graduate students are enrolled from 30 states and more than 20 foreign countries.

Admission to Graduate Study

Admission to graduate degree programs is open to persons holding bachelor's degrees from accredited institutions who have at least 3.0 (B) averages in their majors and the majors are deemed suitable for continuation of studies in the fields of choice. Equivalent accomplishments at a foreign university may be substituted. For the purposes of admission to graduate study, all grades, including those generated from retaking a course, will be included in the calculation of the grade point average.

Many degree programs require GRE or GMAT tests. All applicants must submit (or arrange to have sent) to the Office of Admissions and Records: graduate application for admission, cover letter indicating area of interest, nonrefundable $20 application fee, three letters of reference, and official transcripts from each college or university attended. Interdisciplinary applicants should contact the Graduate School office for information on application requirements.

It is recommended that graduate students make application for admission at least six to nine months prior to the beginning of the semester in which they plan to enroll at UAF. Applications for housing may not be made until after the student has been accepted to a degree program.

Qualified applicants can be accepted for admission while currently enrolled in their last semester of college. However, the acceptance may be conditional upon receipt of official transcripts indicating satisfactory completion of the work in progress at the time of acceptance and 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 Director of Admissions and Records.

Permission to enroll in graduate courses does not imply admission to graduate study. A student may not presume that such course work will necessarily be applicable to a graduate program.

Specialized Programs

The Western Interstate Commission for Higher Education (WICHE) has selected UAF arctic, circumpolar and cold regions studies as part of the unique or specialized graduate programs it coordinates in the western states as the Western Regional Graduate Programs. Residents of Arizona, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, North Dakota, Oregon, Utah, Washington and Wyoming, who major in one of these programs, pay resident tuition at UAF. The programs included are: arctic engineering, atmospheric sciences, biology, botany, fisheries, geology, geophysics, marine biology, mining engineering, natural resources management, oceanography, space physics, wildlife management and zoology.

Correspondence and Information

For copies of the Graduate Catalog and graduate application:
Office of Admissions and Records (907) 474-7822
102 Signers' Hall
University of Alaska Fairbanks
Fairbanks, AK 99775-0060

For general information and interdisciplinary application procedures:
Graduate School (907) 474-7464
305 Signers' Hall
University of Alaska Fairbanks
Fairbanks, AK 99775-0820

For fellowship information:
University of Alaska Foundation (907) 474-7687
910 Yukon Drive
University of Alaska Fairbanks
Fairbanks, AK 99775-5240

For financial aid information:
Financial Aid Office (907) 474-7256
5th Floor, Gruening Bldg
University of Alaska Fairbanks
Fairbanks, AK 99775-0770

Graduate Degree Programs

Ed.S.—Educational Specialist
E.M.—Engineer of Mines
M.A.—Master of Arts
M.F.A.—Master of Fine Arts
M.S.—Master of Science
M.A.T.—Master of Arts in Teaching
M.B.A.—Master of Business Administration
M.C.E.—Master of Civil Engineering
M.Ed.—Master of Education
M.E.E.—Master of Electrical Engineering
Ph.D.—Doctor of Philosophy

Anthropology M.A. Anthropology*
Ph.D. Anthropology

Behavioral Sciences/Human Services
M.A. Community Psychology
M.Ed. Guidance/Counseling (elementary or secondary)

Biology and Wildlife
M.S. Biology*
M.S. Botany*
M.S. Wildlife Management*
M.S. Zoology
M.A.T. Biology
Ph.D. Biology

Business Administration
M.B.A.

Chemistry
M.A. Chemistry*
M.S. Chemistry*
M.A.T. Chemistry

Civil Engineering
M.C.E.
M.S. Civil Engineering
M.S. Arctic Engineering
M.S. Environmental Quality Engineering
M.S. Environmental Quality Science

Economics
M.S. Resource Economics*

Education
M.Ed. Cross-Cultural Education
M.Ed. Curriculum and Instruction
M.Ed. Educational Leadership
M.Ed. Language and Literacy
Ed.S. (Cross-Cultural or Educational Leadership

Electrical Engineering
M.E.E.
M.S. Electrical Engineering

Engineering and Science Management
M.S. Engineering Management
M.S. Science Management

English
M.A. English*
M.A. Professional Writing
M.F.A. Creative Writing

Geology and Geophysics
M.S. Geology*
M.S. Geophysics*
M.A.T. Geology*
Ph.D. Geology
Ph.D. Geophysics

History
M.A.T. History

Marine Science and Limnology
M.S. Marine Biology*
M.S. Fisheries*
M.S. Oceanography*
Ph.D. Oceanography

Interdisciplinary Studies
M.A.*
M.S.*
Ph.D.*

Mathematical Sciences
M.S. Computer Science
M.S. Math*
M.A.T. Math*
Ph.D. Math

Mechanical Engineering
M.S. Mechanical Engineering

Mining and Geological Engineering
M.S. Geological Engineering
M.S. Mining Engineering
M.S. Mineral Preparation Engineering
Engineer of Mines

Music
M.A. Music
M.A.T. Music

Natural Resources Management
M.S. Natural Resource Management*

Petroleum Engineering
M.S. Petroleum Engineering

Physics
M.S. Physics*
M.S. Space Physics*
M.S. Atmospheric Science*
M.A.T. Physics*
Ph.D. Physics
Ph.D. Space Physics
Ph.D. Atmospheric Science

* *GRE required for admission*
** *GMAT required for admission*

Research

The research programs at UAF take advantage of the university's unique location in the subarctic 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 some research carried out in its academic departments, the university has a number of research institutes and centers that focus upon problems of the Arctic and subarctic concerning the environment of the earth, renewable and non-renewable resources, energy sources and the peoples of the north.

Agricultural and Forestry Experiment Station — The research of the Agricultural and Forestry Experiment Station is directed toward increasing the production efficiency of food and wood products, and wisely using the state's lands for agriculture, forestry and recreation. Specifically, the objectives are: (1) to increase the efficiency of production systems for food and wood products; (2) to improve processing, transportation and marketing of food and wood products in Alaska for markets in Alaska and for export; (3) to improve resource inventories and develop land-use planning for agriculture and forestry that will enhance environmental quality; and (4) to develop resource management for improving the quality of life, including revegetation procedures, landscaping and home gardening, and outdoor recreation. Work toward these objectives is carried out in cooperation with the U.S. Department of Agriculture.

Research centers of the Agricultural and Forestry Experiment Station (AFES) are located on the UAF campus and at Palmer in the Matanuska Valley. A plant-materials center, established cooperatively by AFES and the state's Department of Natural Resources, is located near Palmer. Agronomy research is conducted within the Delta and Point MacKenzie Agricultural Projects. Research is under way in western Alaska in support of Alaska's reindeer industry. In addition, the Forest Soils Laboratory is conducting studies within various kinds of forests in interior Alaska in cooperation with federal scientists from the Institute of Northern Forestry, U.S. Forest Service.

The Fairbanks research center staff represents the disciplines of agricultural engineering, agronomy, animal science, botany, economics, forestry, horticulture, outdoor recreation, plant pathology, range science and resource management. The Palmer research center has scientists in agronomy, animal science, agricultural engineering, horticulture and range science. Scientists from the Agricultural Research Service, USDA, representing the disciplines of weed and soil science work cooperatively with AFES at the Fairbanks and Palmer research centers.

Research programs at these various locations provide research opportunities for graduate students.

Alaska Cooperative Fishery and Wildlife Research Units - These units are jointly sponsored and financed by UAF, the Alaska Department of Fish and Game and the U.S. Fish and Wildlife Service. The units provide financial support and guidance for graduate training in fishery and wildlife biology and management and carry out research related to graduate training.

Research emphasis of the Fishery Unit is on the ecology and fisheries of aquatic ecosystems, alteration and contamination of Alaskan freshwaters, and evaluation and development of cold water fisheries techniques. The Wildlife Unit research is directed toward ungulate habitat relationships, waterfowl and seabird ecology, wildlife population dynamics, and the impact of northern development on wild animals and their habitats.

Most research projects of the units are field-oriented and conducted by graduate students in close cooperation with university faculty and agency biologists. Graduate work leading to both master's and doctoral degrees in regular university programs may be supported through the units.

Alaska Native Language Center — The Alaska Native Language Center was established by state legislation in 1972 to document and promote the cultivation of the Indian and Eskimo languages of Alaska. It is part of the College of Liberal Arts and is the major center in the United States for the study of Eskimo and Northern Athabaskan. Many of the staff in addition to doing research, also teach courses in the Alaska Native Language Program. The center's library houses a valuable collection of manuscript materials in and on Alaska Native languages. It is available for use by scholars and students.

Center for Cross-Cultural Studies — Established in 1971, the center is the research and development unit of the Rural College. It promotes programs which concentrate on the needs of Alaska's multicultural society with particular regard to the development of the state's human resources.

Objectives of the center are to design and conduct basic and applied research projects and programs; develop, conduct and evaluate alternative educational approaches for Alaskan schools; disseminate findings on current Alaskan research in education, human services and behavioral sciences, and rural development; provide technical assistance to school districts, social and family service agencies, Native corporations, local governments, community colleges and university learning centers in rural Alaska; provide professional leadership for the improvement of the training and professional development of rural as well as urban Alaskans; and provide a forum for the development of cross-cultural education programs. Opportunities are available for graduate assistants in research projects.

Future research projects will address issues in the field of cross-cultural education in Alaska, and the areas of human services and rural development. Research projects will be selected which offer the greatest promise of extending our understanding of what is occurring in rural Alaskan communities and what educational and service strategies will be most helpful. Future research will strongly incorporate the perspective of community people and practitioners.

Fishery Industrial Technology Center — The Fishery Industrial Technology Center (FITC), located in Kodiak, is part of the School of Fisheries and Ocean Sciences. FITC is dedicated to the contribution of scientific and technical expertise to the harvesting, processing and marketing efforts of the fishing industry. The Center's activities are divided into four major areas—harvesting technology, seafood processing technology, training and support. Its faculty have expertise in the areas of biochemistry, microbiology and seafood technology and engineering. In order to tap these resources for students within the university system, the School of Fisheries and Ocean Sciences hopes to offer a degree program in seafood science and nutrition in the future. FITC research efforts are often coordinated with the Alaska Sea Grant College Program and the Marine Advisory Program.

Geophysical Institute — Institute work focuses on high-latitude geophysical phenomena in five areas: space physics, aeronomy, atmospheric sciences, solid earth research and ice physics (including glaciology, permafrost, sea ice and snow studies). Establishes in 1946, GI has earned an early international reputation for studies of the aurora, magnetosphere and upper atmosphere. As its scope expanded to include a full suite of geophysical concerns, programs were shaped in part by Alaska's high geomagnetic latitude, high geographic latitude, and high level of tectonic activity. GI scientists are active in a

number of international and interhemispheric research programs and in the formulation and execution of U.S. arctic research policy.

The staff of 200 includes a 50-member faculty with an unusually wide range of specialization: solar and interplanetary physics; radio physics; magnetospheric, ionospheric and thermospheric physics; auroral physics and atmospheric chemistry; radiative transfer; regional meteorology, climatology, aerosols and gasses; permafrost; sea ice and river ice; snow and glaciers; paleomagnetism; seismology, volcanology and tectonophysics; geochronology; geothermal energy; geology; ice engineering; and remote sensing.

The institute operates Poker Flat Research Range, a significant resource for upper atmosphere studies using sounding rockets. Optical observatories for auroral and ionospheric studies are at Ester Dome, Poker Flat and Fort Yukon. GI also participates in a geomagnetic meridian chain of optical and magnetic observatories and an auroral observatory at Svalbard.

As a base for the Alaska Volcano Observatory and the state seismologist, GI integrates solid earth research and public service. The institute operates a network of seismic monitors, a seismology laboratory, a potassium-argon geochronology laboratory and several field stations.

Dedicated by the GI in 1988, the Alaska Synthetic Aperture Radar Facility puts the institute on the cutting edge of remote sensing and satellite imaging technology, a new and vital resource for scientists in many fields. The recent move to UAF of the National Science Foundation's Polar Ice Coring Office enhances the fieldwork ability of GI glaciologists, whose work carries them from Greenland to Antarctica, as well as to Alaska's offshore sea ice, alpine and tidewater glaciers, and permafrost regions.

Education and research are also supported by remote sensing archives, a specialized library and a large computer center connected to supercomputers in San Diego and elsewhere. Technical support is provided by an engineering staff and services in computer programming and data entry, electronics, metal and wood working and fabrication, photography, drafting and graphics. GI is housed in the C.T. Elvey Building.

Institute of Arctic Biology — The Institute of Arctic Biology is the principal research arm for life scientists in the College of Natural Sciences. The institute was established in 1963 through authorization from the Alaska Legislature following the recommendation of a select committee of nationally and internationally recognized biologists. The original mandate of the institute, the study of adaptations of plants, animals and human to past and present climates of the Arctic, is maintained but has been expanded to include well-developed programs in ecology and systematics. Ecology programs include research on taiga and tundra sites, including community organization, ecosystem structure and function, functional interactions and interdependencies of plants and animals and the way in which environmental and organismal processes modify nutrient cycling and decomposition within systems. These studies on ecosystem research are closely tied to physiological and biochemical processes of microorganisms, plants and animals, emphasizing coevolved responses such as herbivory which are supported through strong programs such as chemical ecology. Systematics of organisms within arctic and subarctic systems is being studied to establish mechanisms that provide for maintenance of heterogeneity in members of isolated communities. The interest in humans has largely related to anthropologic and archaeologic studies of native Alaskans (present and past) and to improvements in reindeer herd management and productivity that are beneficial in a largely natural system.= The institute is located in the Laurence Irving and the Arctic Health Research Building, and provides a vivarium, animal isolation facility, surgery and a variety of technical and instrumental facilities and services for coordinated and individual research. Special field sites include a 40-acre experimental biological reserve on campus and the Large Animal Research Station, housing breeding colonies of muskox, caribou and reindeer, adjacent to the campus, plus a reindeer research facility at Nome. The institute maintains the only major ecological research station in the Arctic, at Toolik Lake north of the Brooks Range. Research field camps at Eagle Summit, on alpine tundra, at Cantwell, near Denali National Park, and at Homer and Halibut Cove on the shores of Kachemak Bay provide a wide range of ecological diversity for specimen collection and research.

There is a staff of approximately 75 serving the institute. The faculty have joint appointments with instructional colleges and institute faculty participate in offering courses and graduate programs leading to both M.S. and Ph.D. degrees in a variety of subjects related to arctic biology.

Institute of Marine Science — The Institute of Marine Science was established in 1960 by the Alaska Legislature for the purposes of advancing oceanographic knowledge with emphasis on problems of high-latitude seas, of training graduate students in modern oceanography and of conducting both basic and applied marine research. Subsequent expansion has included research and training in marine biology, fisheries oceanography, and special problems in limnology.

Research programs now include: water circulation in the Gulf of Alaska, environmental studies at the oil pipeline terminus of Valdez, fishery systems, seagrass ecology, ecological studies of the northern Bering Sea and southern Chukchi Sea, marine mammals, shellfish and finfish biology, ecological systems associated with the marginal ice zone, the geochemistry of lakes, seawater upwellings, carbon and nutrient cycles, recent and Pleistocene sedimentation and the origin of the continental shelf of Alaska.

Research facilities include modern advanced laboratories on the Fairbanks campus and at Seward. The Seward Marine Center includes a high quality running seawater system, as well as biological and chemical laboratories. Ship operations are also based at the Seward Marine Center. The institute uses other Alaskan coastal facilities as needed. The institute has two research vessels. The R/V *ALPHA HELIX* routinely operates in the Chukchi and Bering Seas, in Aleutian waters and in the Pacific waters adjacent to Alaska, and the R/V *Little Dipper* operates on day trips in Resurrection Bay.

Financial assistance for graduate students is provided through state research assistantships and stipend support coming from agency, industry and foundation grants to the institute.

Institute of Northern Engineering — INE is an interdisciplinary research organization within the School of Engineering.

INE facilities are shared with the Research Section of the Alaska Department of Transportation and Public Facilities (which investigates many important practical research problems), the Alaska Department of Natural Resources (ADGGS), and several other academic departments of the university. Instruction within the School of Engineering includes accredited undergraduate programs in civil, mechanical and electrical engineering. The school also offers graduate level programs in civil, electrical, mechanical, arctic and environmental quality engineering, engineering and science management, plus interdisciplinary master's and doctoral programs (such as hydrology) tailored to the student's needs.

The Engineering Research Center (ERC) promotes research and educational programs dedicated to solving the engineering problems of Alaska and other northern regions. Research presently encompasses a diversity of fields ranging from basic investigations of geomagnetically induced currents on power systems to the testing and evaluation of novel road-bed technologies for more cost-effective rural airfields. ERC focuses its research on the special needs of Alaskans and other peoples of the North. Cooperation with other research institutes located on campus has provided important basic information to help seek practical solutions to problems facing Alaskans.

The Water Research Center (WRC) was established in response to the Water Resources Act of 1964 to conduct research dealing with the water resources environment in Alaska. It is located on the Fairbanks campus and has numerous research sites throughout Alaska. It conducts research concerning inland and coastal, surface and subsurface water — its availability, quantity, quality, movement and treatment, and its uses and abuses in Alaska. WRC also provides a strong interdisciplinary environment for graduate students, giving them considerable breadth for tackling difficult problems.

The Transportation Research Center (TRC) provides the opportunity for faculty, research staff and students at the University of Alaska Fairbanks to conduct research into all aspects of transportation. The principal aim of the TRC is to conduct research concerning the transportation of goods and people. The focus of the research is on local and regional issues. In addition to research into transportation problems which might also be encountered elsewhere, TRC investigators address specific transportation-related problems created by the unique geographic, demographic and environmental characteristics of both urban and rural Alaska.

INE disseminates information through refereed publications, newsletters, reports, workshops and seminars. The publication effort is highlighted with the quarterly journal called "The Northern Engineer." This magazine contains articles on design and technology appropriate for northern climates.

Assistantships are available for well-qualified students to pursue advanced degrees in engineering and water resources.

Juneau Center for Fisheries and Ocean Sciences — The Center for Fisheries and Ocean Sciences was officially established in 1974 as part of the Juneau campus of the University of Alaska. Its mandate was to provide instruction in the basic science disciplines and to offer specialized training at both the undergraduate and graduate levels and to conduct research in marine and anadromous fisheries. With the restructuring of the university in 1987, the program became part of the School of Fisheries and Ocean Sciences of the University of Alaska Fairbanks.

Research programs currently include: association of primary production with recruitment of marine fish and invertebrates, aging and growth of larval fish, early life history of commercially important shellfish, pathology of finfish and shellfish, aquaculture of salmon and seaweeds, genetic improvement of salmon brood stocks, molecular genetic stock separation techniques, behavior of brown bear, population dynamics and management of commercially important fish and shellfish, and hydroacoustic stock estimation.

Research facilities are within the three-story Anderson Building (15,000 square feet) located on the shores of Auke Bay, approximately 12 miles north of Juneau. The building is equipped with a high quality seawater system plumbed throughout the first floor and to biological labs on the third floor. A walk-in freezer and coldroom are also located on the ground level, which houses wet and dry lab research facilities and advanced lab instrumentation. A modern microcomputer lab, including graphics stations and a hydroacoustics lab and image analysis station are located within the building. The center's 42-foot research vessel, *R/V MAYBESO*, routinely operates in inland waters in southeast Alaska. The center cooperatively operates, with the National Marine Fisheries Service, a research salmon hatchery located on Auke Creek, adjacent to the grounds.

Financial assistance for graduate students is provided through research assistantships from state, federal and industry funded grants to the center.

Mineral Industry Research Laboratory — The Mineral Industry Research Laboratory was established by the 1963 Alaska Legislature for the purpose of conducting basic and applied research to aid in the development of Alaska's mineral and energy resources.

This unit, as the research branch of the School of Mineral Engineering, conducts studies concerning beneficiation and hydrometallurgy of Alaskan ores, geology and mineral deposits of the state, placer mining and gold recovery, mining related problems in frozen ground, feasibility studies on mineral deposits, transportation system analyses, geologic mapping of selected areas, development of a data storage and retrieval system for mineral deposits and environmental studies related to mining activities.

A well-equipped coal laboratory is devoted to research and service activities on the characterization, petrography, distribution and preparation of Alaska's coals. This facility is expanding to include determination of the potential for utilizing these coals in conversion processes such as liquefaction and gasification.

Cooperative efforts are maintained with state and federal agencies, and where applicable service function is supplied to individuals and industry. Publications pertinent to the industry are issued and made available to the general public.

A close relationship is maintained with the educational program which presents opportunities for graduate studies in mineral and energy related fields.

Petroleum Development Laboratory — The Petroleum Development Laboratory (PDL) was established in 1984 to engage in practical research to develop and improve technology to maximize the recovery of Alaska's petroleum and natural gas resources. The work conducted will assist industry and state agencies in their effort to effect additional recovery of petroleum and natural gas resources.

The primary function of the PDL is to explore various aspects of enhanced oil recovery research, including the production of heavy oil through thermal recovery and miscible oil displacement. The goal is to transfer the information from the laboratory and field experiments to engineers who can apply it to problems in their oil fields.

Research programs include: secondary (waterflooding) and enhanced oil recovery processes, a comprehensive study of Alaska's oil and gas reservoirs, development of thermal recovery projects to initiate production from Ugnu and West Sak fields, miscible flooding methods for tertiary recovery from Prudhoe Bay, and estimation of gas hydrate reserves in northern Alaska.

Dr. Ray Highsmith, associate professor of marine science, works with research assistant Shelly Clay to identify a marine invertebrate.

Academic Organization

Three colleges and six schools offer degrees in more than 70 fields of study with a host of options within many of the degree programs, as well as a wide range of technical/vocational programs.

UAF offers certificate, associate and baccalaureate and master's degree programs in the arts, sciences and professions, as well as selected doctoral programs in areas of particular strength.

The following pages contain a description of each school and college and the departments found within them. Department faculty and degrees offered are also listed.

College of Liberal Arts

Anne D. Shinkwin, Dean

The primary mission of the College of Liberal Arts is to provide a broad liberal arts education to students at UAF whatever their area of specialization. The college includes disciplines in the social sciences, humanities, performing arts, mathematical sciences, as well as professional programs in journalism and broadcasting and physical education. Research efforts are in many directions but there is increasing emphasis on Alaskan studies, especially those related to public policy issues. A major college goal is to increase its national and international reputation in northern studies. Students are encouraged to participate in northern research projects and to take advantage of the many course offerings in the college that deal with the circumpolar north. College courses also emphasize the importance of literacy skills for all students in writing and oral communication and mathematics, and fosters an appreciation for the arts through active programs in art, music, and theater.

Undergraduate Degrees: Bachelor of arts in Yupik, Eskimo, Inupiaq Eskimo, Alaska Native studies, anthropology, art, English, geography, history, humanities, journalism, justice, foreign language, linguistics, mathematics, music, music education, northern studies, philosophy, physical education, political science, Russian studies, speech communication and theater. Bachelor of science in anthropology, statistics, computer science, geography, mathematics, physical education and statistics. Bachelor of music. Bachelor of fine arts in art.

Graduate Degrees: Master of arts in anthropology, English, Music, Master of fine arts in English, Master of arts in teaching in history and mathematics. Master of science in computer science and mathematics. Doctor of philosophy in mathematics and anthropology.

Department of Alaska Native Languages

Faculty

Department Head and Professor: Michael E. Krauss
Associate Professor: Steven A. Jacobson, James M. Kari
Associate Professor: Edna MacLean (on leave)
Instructors: Gerald Domnick, Eliza Jones, Astrid Smart
Visiting Instructor: James Nageak

Degrees

Inupiaq Eskimo, B.A.
Yupik Eskimo, B.A.

Department of Alaska Native Studies

Faculty

Department Head and Associate Professor: Michael Gaffney
Associate Professor: Dennis Demmert
Assistant Professors: Patricia Kwachka, James Ruppert, Alma Upickshoun
Instructors: Eliza Jones, James Kowalsky

Degrees

Alaska Native Studies, B.A.

Department of Anthropology

Faculty

Department Head and Professor: Richard H. Jordan
Professors: Jean S. Aigner, Lydia T. Black, Anne D. Shinkwin, G. Richard Scott
Associate Professors: Linda J. Ellanna, W. Roger Powers
Assistant Professors: Charlotte Basham, Patricia Kwachka, Phyllis Morrow
Instructors: Greg Owens

Degrees

Anthropology, B.A., B.S., M.A., Ph.D.

Department of Art

Faculty

Department Head and Professor: Glen C. Simpson
Professors: Terence T. Choy, Arthur W. Brody
Associate Professor: Barbara Alexander, Kesler Woodward
Assistant Professors: Philip Lamie, Dwain Naragon
Instructor: Harry Calkins

Degrees

Art, B.A., B.F.A.

Department of English

Faculty

Department Head and Professor: John W. Morgan
Professors: Alice L. Harris, David A. Stark
Associate Professors: Roy K. Bird, Joseph A. Dupras, Marie Lium, Michael J. Schuldiner, Russell E. Stratton, Russell D. Tabbert, Cynthia L. Walker
Assistant Professors: Eric Heyne, Janis Lull, John Murray, Leroy Perkins, James Ruppert, Peggy Shumaker, Frank Soos
Instructor: Doris Ann Bartlett

Degrees

Creative Writing, M.F.A.
English, B.A.
Literature Emphasis

Teaching Emphasis
Writing Emphasis
English, M.A.
Professional Writing and Editing, M.A.

Department of Foreign Languages and Literatures

Faculty

Department Head and Assistant Professor: Vincent Pelletier
Professors: Wolf Hollerbach, John Koo
Associate Professors: Serge Lecomte, Victoria J. Moessner
Assistant Professors: Michel Chevallier, Karen Colligan-Taylor, Nijole Rukas
Visiting Assistant Professor: Anne-Grethe Routley

Degrees

Foreign Language, B.A.
French
German
Russian
Spanish

Department of Geography

Faculty

Department Head and Associate Professor: Roger W. Pearson
Professor: Donald F. Lynch
Assistant Professor: Kenneth A. Barrick

Degrees

Geography, B.A., B.S.

Department of History

Faculty

Department Head and Professor: Claus-M. Naske
Professor: Richard A. Pierce, John S. Whitehead
Associate Professors: Peter G. Cornwall, Carol Gold
Assistant Professor: Terrence M. Cole

Degrees

History, B.A., M.A.T.

Department of Journalism and Broadcasting

Faculty

Department Head and Assistant Professor: Bruce Smith
Associate Professor: George M. Winford
Assistant Professor: Lael Morgan, Alisa White, Kris Wilson

Degrees

Journalism, B.A.
Broadcast
News-Editorial

Department of Library Science

Faculty

Department Head and Professor: David A. Hales
Professor: Paul H. McCarthy
Associate Professors: Sherry L. Abrahams, Marvin W. Falk, Thomas J. Hassler, Tamara P.D. Lincoln, William H. Smith, Dennis J. Stephens, Julia H. Triplehorn, C. Eugene West, Sharon M. West
Assistant Professors: Brenda S. Artman, Marguerite Cornwall, Mark C. Goniwiecha, Pauline Gunter, Bruce Parham, Marvin Pollard, William S. Schneider
Instructor: Gretchen Lake

Linguistics Program

Faculty

Program Head and Assistant Professor: Charlotte S. Basham
Professors: John Koo, Michael E. Krauss
Associate Professor: Lawrence D. Kaplan, James M. Kari
Assistant Professors: Patricia B. Kwachka
Instructor: Astrid Smart

Degrees

Linguistics, B.A.

Department of Mathematical Sciences

Faculty

Department Head and Associate Professor: Clifton Lando
Professors: Jack Distad, Ronald W. Gatterdam, Gary Gislason, Barbara Lando, Robert Piacenza
Associate Professors: Patricia Andresen, Michael Freedman, Peter Knoke, John P. Lambert, Mitchell Roth, Walter Tape, Dana Thomas
Assistant Professors: John Gimbel, Dusan Jevtic, Tsang-Ming Jiang, Pham Xuan Quang, Susan Royer, Larry Santoni, Steven Thompson
Instructor; Richard Clausen

Degrees

Computer Science, B.S., M.S.
Mathematics, B.A., B.S., M.S., Ph.D.
Statistics, B.S.

Department of Military Science

Faculty

Assistant Professors Dan Baergen, Maj., Maurice Blacher, Capt.
Instructor: Trino Villegas, SFC

Degrees

Military Science/Army ROTC (minor only)

Department of Music

Faculty

Department Head and Associate Professor: John Duff
Professors: James Johnson, Thomas Johnston, Gordon B. Wright, Theodore DeCorso, Suzanne Summerville
Associate Professors: Kathleen Butler-Hopkins, Bruno DiCecco, David Stech
Assistant Professors: John Harbaugh, John Hopkins

Degrees

Music, B.A.
Music, B.M.

Music Education
Performance
Music, M.A.
Alaska Ethnomusicology
Music Education
Music History
Performance
Theory/Composition
Music, M.A.T.

Department of Philosophy and Humanities

Faculty

Department Head and Professor: Rudolph Krejci
Professor: Walter Benesch
Associate Professor: Barbara Alexander

Degrees

Humanities, B.A.
Philosophy, B.A.

Department of Physical Education

Faculty

Department Head and Assistant Professor: W. Tom Wells
Assistant Professor: Nancy E. Frith

Degrees

Athletic Coaching (minor only)
Physical Education, B.A., B.S.

Department of Political Science/Justice

Faculty

Department Head and Associate Professor: Gary Copus
Professors: Gerald McBeath, Andrea Helms
Associate Professor: Otwin Marenin
Assistant Professors: James Gladden, Kendall Stockholm

Degrees

Justice, B.A.
Political Science, B.A.

Department of Speech and Drama

Faculty

Department Head and Associate Professor: John S. Leipzig
Professor: Walter Ensign
Associate Professors: Robert B.Arundale, Jayna Orchard
Assistant Professors: Johnny Murdock, Tom Riccio
Instructor: Marcia Stratton

Degrees

Speech Communication, B.A.
Theater, B.A.

College of Natural Sciences

Kolf Jayaweera, Dean

The College of Natural Sciences embraces several areas of study: biology and wildlife; chemistry; biochemistry and molecular biology; geology and geophysics; physics; space physics; and atmospheric sciences. The major undergraduate programs are in biology, geology, chemistry and physics. Work at the master's level is offered in all of the areas of study. Only graduate programs are offered in space physics and atmospheric sciences. Graduate programs take advantage of the outstanding research facilities relating to northern problems: the Geophysical Institute, the Institute of Arctic Biology and the Alaska Cooperative Wildlife Research Unit. The college also offers two interdisciplinary programs, earth sciences and general sciences, specifically intended for those seeking teaching certificates.

Undergraduate Degrees - Bachelor of science in geology (options in general geology, economic geology, geophysics and petroleum geology), biological sciences and wildlife management; chemistry; physics and general sciences. Bachelor of arts in biological sciences and earth science.

Graduate Degrees - Master of science in biology, zoology, wildlife management, chemistry, geology, geophysics, physics, general science, space physics and atmospheric sciences. Master of Arts in Teaching in biological sciences, chemistry, geology, and physics. Ph.D. in biological sciences, physics, space physics, atmospheric sciences; geophysics; geology. The College of Natural Sciences also offers a variety of interdisciplinary degrees in ecological sciences, wildlife management, atmospheric chemistry, biochemistry and molecular biology.

Department of Biology and Wildlife

Faculty

Department Head and Professor: Ronald L. Smith
Professors: F. Stuart Chapin, Dale D. Feist, Howard Feder, R. Dale Guthrie, Stephen F. MacLean, David F. Murray, Luis Proenza, Gerald F. Shields, Robert B. Weeden, Robert G. White, Frank Williamson
Associate Professors: W. Scott Armbruster, R. Terry Bowyer, Pierre Deviche, Jacqueline D. LaPerriere, Edward C. Murphy, Mark W. Oswood
Assistant Professors: Brian M. Barnes, John Blake, John P. Bryant, John F. Fox, Kent E. Schwaegerle, James Stone Sedinger, Joshua Schimel
Instructor: Douglas L. Schamel
*Coordinator of Biochemistry and Molecular Biology:*Lawrence Duffy

Degrees

Biological Sciences, B.A., B.S.
Biology, M.S., M.A.T., Ph.D.
Botany, M.S.
Wildlife Management, B.S.
Management Biology
Research Biology
Wildlife Management, M.S., Ph.D.
Zoology, M.S., Ph.D.

Department of Chemistry

Faculty

Department Head and Professor: Paul Reichardt
Professors: Donald Button, Daniel B. Hawkins, L. Claron Hoskins, David Shaw
Associate Professors: Lawrence Duffy, Donald Lokken, Richard Stolzberg, Betty Anne Phillip, John Keller
Assistant Professor: Peggy J. Arps, Daniel Jaffe

Coordinator of Biochemistry and Molecular Biology: Lawrence Duffy
Instructor: Diane Shaw

Degrees

Chemistry, B.A., B.S., M.A., M.S., M.A.T.

Department of Geology and Geophysics

Department Head and Professor: Samuel E. Swanson

Faculty

Geology Faculty

Professors: Daniel B. Hawkins, David M. Hopkins, Don M. Triplehorn
Associate Professors: R.A. Gangloff, Rainer J. Newberry, Lewis H. Shapiro, Samuel E. Swanson
Assistant Professors: James E. Beget, R. Keith Crowder, Mary Keskinen, Wes Wallace, Keith Watts
Adjunct Professors: Laural Burns, John Davies, Charles G. (Gil) Mull, Chris Nye, Gar Pessel, Richard D. Reger, Thomas E. Smith, Milton A. Wiltse

Geophysics Faculty

Coordinator and Associate Professor: Hans Pulpan
Professors: Nirendra Biswas, Juergen Kienle, Thomas E. Osterkamp, David B. Stone, Eugene M. Wescott, Wilford Weeks
Associate Professors: Joan Gosink, Hans Pulpan, William M. Sackinger, William J. Stringer
Assistant Professors: Douglas Christensen, Keith A. Echelmeyer

Degrees

Geology, B.S.
  Economic Geology
  General Geology
  Petroleum Geology
  Solid Earth Geophysics
Geology, M.A.T.
Geology, M.S.
  Economic Geology
  General Geology
  Petroleum Geology
Geology, Ph.D.
Geophysics, M.S.
  Snow, Ice and Permafrost Geophysics
  Solid Earth Geophysics
Geophysics, Ph.D.
Earth Science, B.A. (Interdisciplinary)

Department of Physics

Faculty

Department Head and Professor: John Morack
Professors: S. Akasofu, William D. Harrison, Kolf Jayaweera, Joseph R. Kan, Hans Nielsen, Manfred H. Rees, Juan G. Roederer, Glenn E. Shaw, Daniel W. Swift, Gunter E. Weller, Gerd Wendler, Lou-Chuang Lee
Associate Professors: David C. Fritts, Thomas J. Hallinan, John S. Murray, John V. Olson, Roger W. Smith, Brenton J. Watkins.
Assistant Professors: Sue Ann Bowling, Neal Brown, Koji Kawasaki, Channon Price, Hiroshi Tanaka
Laboratory Instructor: John K. Petersen
Coordinator of the Graduate Program: Daniel W. Swift
Coordinator of the General Science Program: John Murray

Degrees

Applied Physics, B.S.
Atmospheric Sciences, M.S., Ph.D.
General Science, B.S., M.S.
Physics, B.A., B.S., M.S., M.A.T., Ph.D.
Space Physics, M.S., Ph.D.

Museum Studies Program

Faculty

Associate Professors: Jim E. Dixon, Roland A. Gangloff
Assistant Professor: S. Craig Gerlach

Rural College

Gerald V. Mohatt, Dean

The Rural College was created in 1987 when the restructuring of the University of Alaska system was implemented. The Rural College is committed to educational processes through which its students are empowered to effect social and economic changes in their communities, and protect and enrich the quality of their lives and culture. Particular consideration is given to the needs of permanent residents of rural Alaska and students in non-traditional settings who seek skills and degrees suited to the rural economy and to the well-being of rural communities and the demands and needs of complex multicultural settings.

The college offers a range of academic and programmatic options to students which respond to the changing conditions of Alaska. Short-term courses, workshops, vocational and in-service training, developmental studies, credit for prior learning, and other non-degree oriented services provide community and continuing education opportunities. Associate of Applied Science degrees (including applied business, the health professions, early childhood education and others) reflect local and/or collegewide needs. The Associate of Arts degree provides a foundation of liberal studies, entry into a variety of paraprofessional careers, and access to all baccalaureate degrees. The college offers baccalaureate degrees in education, social work, rural development, psychology and sociology, along with graduate degrees in education and psychology. All programs in the college seek to prepare persons to work effectively in cross-cultural settings and display a sensitivity to and understanding of the diversity of the human condition.

The college is a center for the development and support of distance delivery and field-based degree and non-degree course work throughout the university. Selected degrees and certificates are offered at the dispersed campuses in the Aleutians, Bristol Bay, Chukchi, Interior, Kuskokwim, and Northwest regions of the state which administer instructional programs in association with five departments: Behavioral Sciences and Human Services, Education, General Studies, Rural Development, and Vocational/Technical Education. Research and development activities involving issues associated with rural Alaska are supported and administered through the Center for Cross-Cultural Studies. Academic and logistical support for these distance-delivered programs and correspondence study are provided through the Center for Distance Education.

Department of Behavioral Sciences and Human Services

Faculty

Department Head and Associate Professor: Gerald S. Berman
Professors: E. Clifford Brennen, Charles R. Geist, Gerald V. Mohatt, Philip O. Nice, M.S. Nagabhushana Rao

Associate Professors: Gerald S. Berman, Robert S. Cravens*, Richard G. Possenti, Harris Shelton, Lucy Sparck*
Assistant Professors: Jill H. Baker, James Cole, William Connor, Carol Diehl, Mary Hampton, Laurie Marum*, Valerie Montoya, Cathy Sink
Instructors: Michael Hannigan*, Patricia Hensch*, David W. Norcross*, Cheryl Roussain-Nice, Patricia Shalter*
* *Non-Fairbanks faculty*

Degrees

Community Psychology, M.A.
Guidance and Counseling, M.Ed.
- Elementary
- Secondary

Human Services, B.A.
Psychology, B.A., B.S.
Social Work, B.A.
Sociology, B.A., B.S.

Education Programs

Faculty

Department of Education, Fairbanks Faculty
Program Head and Professor: Judith S. Kleinfeld
Associate Professors: Dennis Demmert, Perry Gilmore, David A. Hagstrom, William H. Parrett, Richard E. Riedl, Lillian P. Stinson
Assistant Professors: Eber Hampton, Patricia A. Nelson, Jolene Workman
Instructors: Karen J. Noordhoff, William R. Pfisterer, Mary A. Slaughter, Sidney Stephens

Center for Cross-Regional Education Programs
Program Head and Professor: Raymond J. Barnhardt
Professor: David M. Smith
Associate Professors: Ralph Gabrielli, Stephen F. Grubis, Jerry M. Lipka*, Barry Sponder*
Assistant Professors: Mary Birkeland*, Oscar Kawagley*, Eric C. Madsen*, Francis Mitchell*, Dennis Schall*
Instructors: LaMont Albertson, Wendy Esmailka, Perry Mendenhall*, Carolyn Peter*, William Pfisterer, Sidney Stephens

* *Non-Fairbanks faculty*

Degrees

Education, B.Ed.
- Elementary
- Secondary

Education, B.T.
- Secondary

Education, Ed.S.*
- Cross-Cultural Studies
- Public School Administration

Education, M.Ed.*
- Cross-Cultural
- Curriculum and Instruction
- Educational Leadership
- Language and Literacy

* *Education graduate programs are offered statewide through UAF's distance delivery system.*

Department of Rural Development

Faculty

Department Head and Associate Professor: Patrick J. Dubbs
Professor: Raymond J. Barnhardt
Assistant Professor: Ramona Soza*
Instructors: Taylor Brelsford, Richard A. Caulfield* (on leave), Jeanette Morton*

* *Non-Fairbanks faculty*

Degrees

Rural Development, B.A.
- Applied Land Management
- Community Organizations and Services
- Community Research and Cultural Documentation
- Local Government Administration
- Village Corporation Management

Department of General and Developmental Studies

Faculty

Department Head and Associate Professor: Joli Morgan*
Associate Professors: Robert Cravens*, Ralph Gabrielli, Lynn Johnson*, John Shuler*, Charles S. Wade*, Theodora Wintersteen*
Instructors: Jonathan Byrne*, Jerah Chadwick*, Steve Chamberlain*, John Creed*, Wendy Esmailka, Melinda Feldt*, Bob Gal*, Beverly Grogan*, Nancy Mendenhall*, Maynard Perkins*, Carolyn Peter*, Ann Prichard*, Glenda Schmierbach*, Astrid Smart*, Donna Van Luchene*

* *Non-Fairbanks faculty*

Degrees

Associate of Arts

Department of Vocational Education

Faculty

Department Head and Instructor: Donna Van Luchene*
Associate Professors: Joli Morgan*, Samuel I. Rogers*, Charles S. Wade*
* *Non-Fairbanks faculty*

Degrees

Associate of Applied Science
- Applied General Business
- Community Health Practitioner
- Office Professions

Associate of Arts

Non-Fairbanks faculty listed by campus

Bristol Bay Campus (Dillingham)

Faculty

Director: Peggy Wood
Associate Professor: Jerry M. Lipka
Instructors: Taylor W. Brelsford, Richard A. Caulfield (on leave)

Degrees

Associate of Arts
Education, B.Ed.
Rural Development, B.A.

Chukchi Campus (Kotzebue)

Faculty

Director and Associate Professor: Lynn Johnson
Assistant Professors: Eric C. Madsen, Laurie Marum
Instructors: Jonathan Byrne, John Creed, Bob Gal, Ann Prichard, Patricia J. Shalter

Degrees

Associate of Arts
Education, B.Ed.
Rural Development, B.A.
Social Work, B.A.

Interior Campus

Faculty

Director and Instructor: Wendy Esmailka
Instructors: Jerah Chadwick, Melinda Feldt, Carolyn Peter
Adjunct Faculty: Marcia Cressel Argall, Ray Collins, Larry Roberts

Degrees

Associate of Arts
Education, B.Ed.
Rural Development, B.A.
Social Work, B.A.

Kuskokwim Campus (Bethel)

Faculty

Director and Instructor: LaMont Albertson
Associate Professors: Robert Cravens, Joli Morgan, Robert J. Shuler, Lucy Sparck, Barry Sponder, Charles S. Wade, Theodora Wintersteen
Assistant Professors: Mary Birkeland, Dennis G. Schall, Ramona Soza
Instructors: Steve E. Chamberlain, Patricia Hensch, David W. Norcross, Glenda Schmierbach

Degrees

Associate of Arts
Associate of Applied Science
- Applied General Business
- Aviation Technology
- Community Health Practitioner
- Early Childhood Education
- Office Professions

Education, B.Ed.
Rural Development, B.A.

Certificates

Community Health Aide
Child Development Associate

Northwest Campus (Nome)

Faculty

Director and Instructor: Nancy Mendenhall
Associate Professors: Ralph B. Gabrielli, Samuel I. Rogers
Instructors: Michael Hannigan, Perry T. Mendenhall, Jeanette Morton, Maynard Perkins, Astrid Smart, Donna VanLuchene

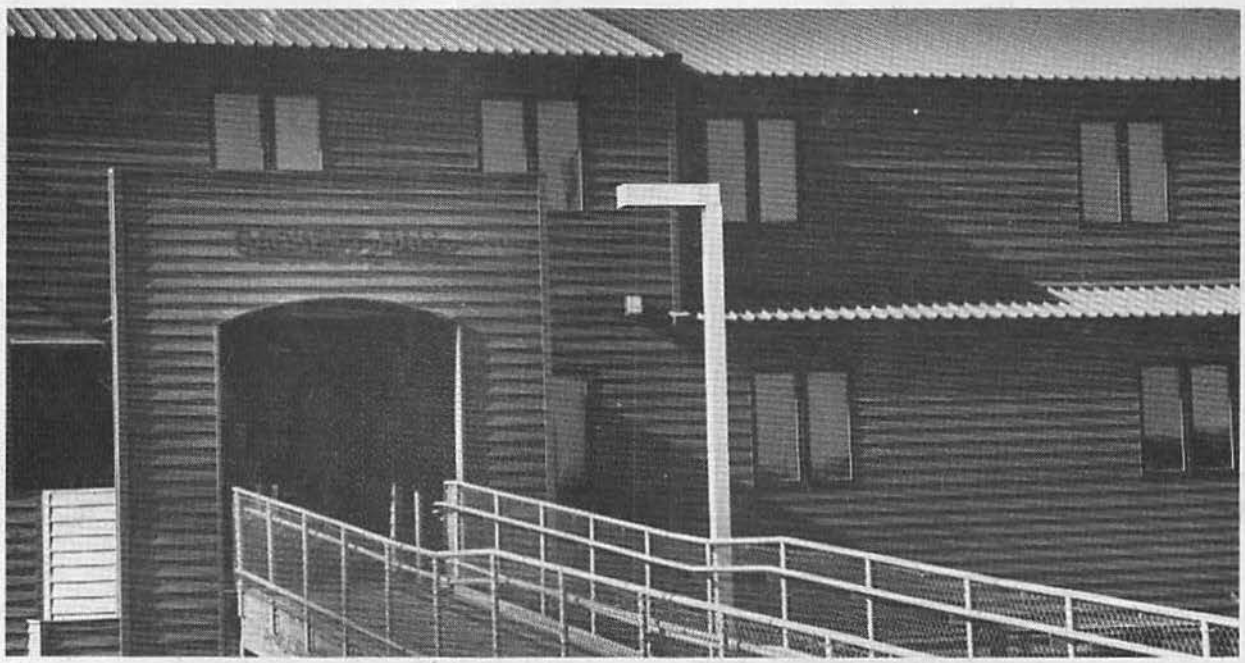
Degrees

Associate of Arts
Associate of Applied Science
- Applied General Business
- Community Health Practitioner
- Office Professions

Education, B.Ed.
Rural Development, B.A.
Social Work, B.A.

Certificates

Business
Community Health Practitioner



Sackett Hall on the Kuskokwim Campus provides student housing on the campus in Bethel.

School of Agriculture and Land Resources Management

James V. Drew, Dean

The School of Agriculture and Land Resources Management is composed of the Divisions of Resources Management, Forest Sciences, and Plant and Animal Sciences. Also included is the Agricultural and Forestry Experiment Station with facilities at Fairbanks, Palmer and the Forest Soils Laboratory at Fairbanks. Research in many aspects of agriculture, forestry, outdoor recreation, water resource management, soils, park and wilderness management, and resource planning and administration is carried on by faculty of the school.

The instructional program offers a bachelor of science degree in natural resources management with options in natural resources, forestry, or agriculture, and a master of science degree in natural resources management. The courses and programs were developed in close cooperation with many university units and non-university agencies and groups.

State and federal agencies which significantly contribute to the programs by providing guest lecturers, work with graduate students and internship/field work experience for students are the Alaska Department of Natural Resources, Agricultural Research Service, U. S. Forest Service, the Bureau of Land Management, Soil Conservation Service, Alaska Department of Fish and Game, Fairbanks North Star Borough, Alaska Association of Soil Conservation Subdistricts, and U. S. Fish and Wildlife Service.

Undergraduate Degree — Bachelor of science degree in natural resources management with options in natural resources, forestry, or agriculture.

Graduate Degree — Master of science in natural resources management; interdisciplinary degrees are possible for some students desiring more specialized degrees especially in the agricultural sciences.

Administration

Dean of the School of Agriculture and Land Resources Management, Director of the Agricultural and Forestry Experiment Station, and Professor of Agronomy (Fairbanks): James V. Drew

Associate Dean of the School of Agriculture and Land Resources Management, Associate Director of the Agricultural and Forestry Experiment Station, and Associate Professor of Agronomy (Palmer): G. Allen Mitchell

Division of Resources Management

Faculty

Division Head and Associate Professor: Carol E. Lewis
Professors: Alan Jubenville, Wayne C. Thomas, Robert B. Weeden
Associate Professor: William G. Workman
Assistant Professors: Thomas J. Gallagher, Carla A. Kirts

Degrees

Natural Resources Management, B.S.
Natural Resources Management, M.S.

Division of Forest Sciences

Faculty

Division Head and Professor: Keith Van Cleve
Associate Professor: Anthony Gasbarro
Assistant Professors: John D. Fox, Glenn P. Juday, Edmond C. Packee, John A. Yarie

Degree

Natural Resources Management/Forestry Option

Division of Plant and Animal Sciences

Faculty

Division Head and Professor: Frank J. Wooding
Associate Professors: Donald E. Carling (Palmer), Fredric M. Husby, Jenifer H. McBeath, Jay D. McKendrick (Palmer), Stephen D. Sparrow
Assistant Professors: Leroy Ben Bruce (Palmer), Robert F. Cullum, Stephen M. Dofing (Palmer), Patricia S. Holloway, Meriam Karlsson, Michael T. Panciera (Palmer), Chien-Lu Ping (Palmer), Ruthann B. Swanson, James Walworth (Palmer), Paul M. Windschitl (Palmer)
Instructor: Charles W. Knight

Agricultural Research Service, U.S.D.A.

Research Soil Scientist: Verlan L. Cochran
Research Weed Scientist: Jeffrey S. Conn
Research Soil Physicist: Brenton Sharratt

Degree

Natural Resources Management/Agriculture Option

School of Career and Continuing Education

Patricia A. Book, Acting Dean

The School of Career and Continuing Education is the extended learning component of the University of Alaska Fairbanks, and should be viewed as the lead unit and center for promoting, coordinating and delivering instructional activities for adults. Further, it delivers vocational/technical/career training beneficial to the community.

Among the primary responsibilities of the school are vocational/technical/career training and education at certificate and associate degree levels; increasing public access to instructional resources at the university for the residents of the Fairbanks North Star Borough and the surrounding areas; and expanding and enriching the credit and non-credit continuing education opportunities for local residents. Other emphases of the school include providing programs and resources to meet the developmental educational needs of underprepared university constituencies; outreach to special constituencies of UAF including military service members, mature adults returning to college in an evening or weekend setting, off-campus students, and home-based students; providing a mechanism for meeting the continuous lifelong learning needs of community members; and linking university resources to local community, economic and social development concerns.

The school offers a welding program, an important industrial skill with applications in agriculture, mining, transportation, aviation, oil and gas, and construction. Training ranges from welding basics to advanced pipe and metal plate fabrication. Advanced students may choose to work toward American Welding Society certification or pursue advanced projects.

A wide array of computer courses are offered by SCCE. Computer application courses and special user seminars are offered regularly. Special emphasis is placed on popular business application programs for both the Apple and IBM-compatible computers. For the convenience of students, SCCE has computer labs equipped with IBM-compatible, Apple IIe and Apple MacIntosh computers. Mastery of one or more computers can greatly enhance career opportunities in many fields. A certificate program is currently in the planning stage.

Community Outreach — Classes are offered at more than 30 locations including the UAF campus, the UAF Downtown Center, Moose Creek Center, Hutchison Career Center, Fort

Wainwright and Fort Greely Army posts, and Eielson Force Base. The school also extends education and training programs through the Delta Greely Learning Center. The school provides students with credit and non-credit courses, workshops and programs geared toward local interests.

Continuing Education — SCCE takes the lead in responding to individual and community needs for innovative training and high quality continuing education programs. Academic short courses and non-credit workshops are designed to meet the needs of practitioners in the trades or professions. SCCE provides in-service training for teachers, in-house supervisory skill seminars for local businesses and agencies, and general programs for cultural enrichment.

Certificate Programs — UAF offers vocational education, technical training and general studies through SCCE. Nine one-year certificate programs are offered in several fields including airframe and powerplant, culinary arts, diesel/heavy equipment mechanics, drafting technology, early childhood development, mining technology, office professions and fire science. Certificate programs are designed to give intensive training in specific career areas. Skills gained are job entry-level in nature, and course work completed can apply to degree programs. Certificate programs do not require general degree courses and can usually be completed in one year (30 credits).

Associate of Applied Science Degrees — The school offers 11 Associate of Applied Science (A.A.S.) degrees in several occupational fields of study with emphasis on entry into the job market. This degree, usually seen as a terminal degree, can serve as the basis for additional training. These degree programs, each with an emphasis on the practical applications of the knowledge gained in the program, provide the necessary educational background to enter several fields, including business, accounting, financial institutions management, airframe and powerplant mechanics, aviation technology, culinary arts, early childhood development, office professions, paraprofessional counseling and fire science.

Associate of Arts Degree — The Associate of Arts Degree (A.A.) is both an intermediate degree and a terminal degree. The Associate of Arts degree provides a foundation of liberal studies, entry into a variety of paraprofessional degrees and access to all baccalaureate degrees. The A.A. degree provides the student with a broad background in the liberal arts, humanities and sciences. It is designed for students who intend to continue their education in pursuit of a bachelor's degree or who wish to acquire a broad knowledge base. It is non-specific in content. Only one A.A. degree per student may be earned.

Student Development and Learning Center

Faculty

Career Counseling
Department Head and Associate Professor: DeAnne Hallsten

Developmental Studies
Instructor: Ron Illingworth

Learning Resource Center
Instructor: Marcele Skelton

SDLC Part-time Instructors: Gayle Bergdall, Susan Dearborn, JoAnne Englehard, Laurie Hildenbrand, Dev Saroop Kam Khalsa, Prem Kaur Khalsa, Mary Lubke, Marcia Mason, Peggy Morris, Sally O'Connell, Forrest Opper, Julian Rivers, Riki Sipe, Lenore Torgerson, Helen Warner, Peggy Watson

Academic Programs

Faculty

Academic Programs
Associate Dean: Patricia A. Book
Department Head: Bud Rager
Part-time Instructors: M. Carol Allison, Lori Chase, Linette Finstad, Linda Lews, Mike Madill, Farhad Memarzadeh, David Mollett, Terry Moore, Peggy Morris, Jon Nielson, Dulce Nobre, Barbara Philleo, Wynola Possenti, N. Rao, Lisa Salisbury, Candice Shannon, Todd Sherman, Peggy Watson, Eugene West, Charles Young

Early Childhood Development
Visiting Assistant Professor Jo Kuykendall
Part-time Instructors: Rebecca Blackburn, Joanne Healy, Barbara MacCallum, Patty Merritt, Polly Page, Diane Suskind, Susan Thierman, Shar VanDyke

Paraprofessional Counseling
Coordinator: Carol Brice
Part-time Instructors: Carol Allison, John Baertschy, Joseph Bratton, Sharon Bullock, Robert Dunn, Lucinda Folsom, Kornelia Grabinska, Richard Gumm, Tina Kocsis, Mary Luebke, Aileen McInnis, Irene McIntosh, Steve Parker, Elizabeth Scollan, Mike Schmoker, Sheila Smith, Ted Sponsel, Susan Thierman, Dorothy Turan, Maryann Turkal, Kevin Turnbough

Faculty in other departments:
Department of English, Associate Professor: Marie Lium
Department of Mathematics, Instructor: Richard Clausen

Degrees

Associate of Arts
Early Childhood Development, A.A.S., Certificate
Paraprofessional Counseling, A.A.S.

Community and Economic Development

Small Business Development Center of Alaska

Trade and Industry Department

Faculty

Airframe and Powerplant/Aviation Technology
Department Head and Associate Professor: Fred Dyen
Assistant Professor: Arvid Weflen
Instructor: Albin Reynolds
Part-time Instructors: Mike Campbell, Chris Catalone, Vicki Domke, Mike Ellsworth, Tom George, William Hunt, Brian Sherer, Stan Stealey

Diesel and Heavy Equipment
Assistant Professor: Paul Greimann
Part-time Instructor: Doug Derickson

Drafting Technology
Instructor: Kurt Torgerson
Part-time Instructors: Ken Hobson, Scott Johnson, Glen Kravitz, Ronald Price

Mining Technology
Instructors: P. Jeffrey Burton, Kurt Torgerson
Part-time Instructors: Tom Benjamin, Kate Lamal, Josh Moore, Alfred Sturmann, Louis Tozzi

Welding
Instructor: Walt Peterson

Degrees

Airframe & Powerplant, A.A.S., Certificate
Aviation Technology, A.A.S.
Diesel & Heavy Equipment, Certificate
Drafting, Certificate
Applied Mining Technology, Certificate

Business Systems and Technology Department

Faculty

Applied Business
Associate Professor: Sande Seppamaki
Part-time Instructors: Richard Brickley, Arlene Collins, Barbara Cook, Bill Dutton, Denise Ellison, Alan Head, Theresa Henderson, Diane Hutchison, Jeff Johnson, Terry Kelly, Bob Noreen, Mary Perreault, Gerald Richards

Office Professions
Department Head and Associate Professor: Radene Schroeder
Associate Professor: Pat Turner
Part-time Instructors: Jean Burger, Consuello Lopez, Jane Niebauer, Vicki Phipps

Computer Applications
Associate Professors: Joe Dart, Dorothy Jones
Part-time Instructors: Helen Barrett, Raymond Billings, Patricia Bulkow, Carol Carlson, Craig Helmuth, Verna Henkel, Bill Rosetti, Doug Toelle, Glenn Wilcox

Degrees

Applied Business, A.A.S.
Financial Institution Management, A.A.S.
Office Professions, A.A.S., Certificate

Service Industry Department

Faculty

Culinary Arts
Department Head: Jakub Esop
Associate Professor: Ruiz Anne Rozell
Instructor: Frank Davis
Part-time Instructors: Jeff Block, Mike Carrol, Angela Darby, Peter Hansen, Lee Lal, Mary Lou Weese

Fire Science
Coordinator: Mike Holzmueller
Part-time Instructors: Don Barry, Sue Christensen, Linn Clawson, Sue Clawson, Edith Curry, Charles Lundfelt, Mike McGowan, Ernie Misewicz, Eric Mohrmann, Mike Oden, Dave Rockney

Degrees

Culinary Arts, A.A.S., Certificate
Fire Science, A.A.S., Certificate

School of Engineering

Vincent S. Haneman, Jr., P.E., Dean

Professional engineering embraces the wide range of cultural and technical subjects related to the planning, design and construction of works necessary for civilization. An engineer is an innovator, a builder and a problem solver. The engineer turns scientific knowledge into goods and services useful to society and is responsible to society in the decisions he or she makes. The engineer is interested in creating. To be of value to society the engineer frequently works as a member of a professional team often in positions of leadership.

In addition to providing the training necessary for entrance into the professional practice of engineering, an undergraduate degree in engineering provides an excellent background for those desiring to enter law, medical, or business school. The engineering programs at the university emphasize northern problems and principles; therefore, engineering and technology graduates of UAF are in great demand not only in the Alaskan job market, but in all sections of the United States. Engineering involving the additional problems of high latitude make the UAF graduate especially desirable. Many of the leading professional engineers of Alaska are graduates of the UAF engineering program.

Since engineering is based on the physical sciences of mathematics, chemistry and physics, engineering students are introduced to the basic principles in these areas during their first two years of study. The third year of study is largely devoted to courses in the engineering sciences-extensions of the basic sciences forming the foundation for engineering analysis and design. In the senior year, students specialize within their disciplines and draw upon previous learning to focus their studies on creative design and analysis through simulated projects. Essential concepts and applications in engineering require analysis, synthesis and design. The computer, from very sophisticated PC's to extensive mainframes, is an integral part of the UAF engineering program from the freshman through graduate courses. The reduction to proof is carried forth by the school's Institute of Northern Engineering.

Undergraduate Degrees - The School of Engineering offers courses of study leading to the four-year bachelor of science degree in civil, electrical or mechanical engineering. The School of Engineering has all three undergraduate programs accredited by the Accreditation Board for Engineering and Technology (ABET), the agency responsible for assurance of quality in the professional schools across the nation.

Graduate Degrees - The school also offers graduate-level programs in engineering management, environmental quality engineering and arctic engineering, as well as in civil, electrical and mechanical engineering, to students with baccalaureate degrees in engineering. Seminars and workshops are offered to practicing engineers and others. Video continuing engineering education provides remote location support of professionals throughout the state and country.

Department of Civil Engineering

Faculty

Department Head and Associate Professor: J. Leroy Hulsey, P.E.
Professors: Robert F. Carlson, P.E., Douglas L. Kane, P.E., Timothy Tilsworth, P.E.
Associate Professors: Jan Botha, Thomas C. Kinney, P.E., Lufti Raad
Assistant Professors: Kevin Curtis, Mark A. Tumeo

Degrees

Arctic Engineering, M.S.
Civil Engineering, B.S., M.C.E., M.S.
Environmental Quality Engineering, M.S.
Environmental Quality Science, M.S.

Department of Electrical Engineering

Faculty

Department Head and Professor: John D. Aspnes, P.E.
Associate Professor: Kenneth J. Kokjer, P.E.
Assistant Professors: Joseph G. Hawkins, Charles E. Mayer, B. David Spell, P.E., Gerald G. Walker
Professor Emeriti: Robert P. Merritt, P.E., Thomas D. Roberts, P.E.

Degrees

Electrical Engineering, B.S., M.S., M.E.E.

Department of Engineering and Science Management

Faculty

Department Head and Professor: F.L. Bennett, P.E.

Degrees

Engineering Management, M.S.
Science Management, M.S.

Department of Mechanical Engineering

Faculty

Department Head and Professor: Ronald A. Johnson, P.E.
Professors: Vincent S. Haneman, Jr., P.E., John P. Zarling, P.E.
Associate Professor: Deben K. Das, P.E., Terry McFadden, P.E.
Assistant Professors: Douglas J. Goering, Luis C. Gominho, Jonah Y. H. Lee
Visiting Assistant Professor: Grant C. Baker

Degrees

Mechanical Engineering, B.S., M.S.

School of Fisheries and Ocean Sciences

Vera Alexander, Acting Dean

The School of Fisheries and Ocean Sciences was created in 1987. It is the result of a merger of all the fisheries and marine programs of the University of Alaska into a single unit administered by one campus. This amalgamation has created an opportunity to focus and strengthen those elements into a comprehensive and cohesive unit. SFOS presently educates students through degree programs at the bachelor's level in fisheries science, and at the master's degree level in the areas of fisheries science, marine biology, biological oceanography, chemical oceanography, fisheries oceanography, geological oceanography, and physical oceanography. Planning is also underway for a master's degree level program in seafood science and nutrition. Ph.D. degrees are offered in oceanography. Fisheries degrees at the Ph.D. level are presently undertaken on an interdisciplinary basis, but a formal Ph.D. program in fisheries is being developed.

The School of Fisheries and Ocean Sciences is home to research institutes, academic programs, and public service components throughout the state. Fisheries science degrees are offered through the Program in Fisheries by UAF at the Fairbanks campus and at Juneau*, where faculty, formerly with the School of Fisheries and Science at the University of Alaska Southeast (formerly the University of Alaska Juneau), are now affiliated with the Juneau Center for Fisheries and Ocean Sciences, a research unit of UAF. The Institute of Marine Science has facilities in Fairbanks and Seward. Its faculty, through the Graduate Program in Marine Sciences and Limnology, instruct and supervise students seeking marine biology and oceanography degrees. The faculty of the Fishery Industrial Technology Center in Kodiak, while presently focusing on research, will be involved with the planned degree program in seafood science and nutrition.

* *Juneau students should also reference the University of Alaska Southeast catalog.*

Graduate Program in Marine Sciences and Limnology

Faculty

(All faculty are affiliated with the Institute of Marine Science.)
Program Head and Professor: William S. Reeburgh
Professors: Vera Alexander, Don K. Button, Sven O.E. Ebbesson, Robert Elsner, Francis H. Fay, Howard M. Feder, John J. Goering, C. Peter McRoy, A. Sathy Naidu, Thomas C. Royer, David C. Shaw
Associate Professors: R. Theodore Cooney, Susan M. Henrichs, Raymond C. Highsmith, John J. Kelley, Zygmunt Kowalik, Henry J. Niebauer, F. Gerald Plumley, Donald M. Schell
Assistant Professors: Michael A. Castellini, Walter R. Johnson, George W. Kipphut, David L. Musgrave, Brenda L. Norcross

Degrees

Marine Biology, M.S.
Oceanography, M.S., Ph.D.

Program in Fisheries

Faculty

(Faculty research affiliations within SFOS as noted.)

Professors: Richard Gard (JCFOS), Jong S. Lee (FITC), Ole A. Mathisen (JCFOS)
Associate Professors: Willard E. Barber, Robert M. Fagen (JCFOS), John S. French (FITC), Anthony J. Gharrett (JCFOS), Lewis J. Haldorson (JCFOS), Terrance J. Quinn II (JCFOS), James B. Reynolds, Thomas C. Shirley, William W. Smoker (JCFOS)
Assistant Professors: Charles A. Crapo (FITC), Jeremy S. Collie (JCFOS), William D. Eaton (JCFOS), Brian H. Himelbloom (FITC), Jeffrey C. Nash (FITC)

Degrees

Fisheries, B.S.
Research (Fairbanks)
Management (Fairbanks)
Fisheries, M.S.
(Fairbanks and Juneau)

Public Service

Faculty

(All associated with the Marine Advisory Program.)

Professor and Chairman: Donald E. Kramer
Professor: John P. Doyle
Associate Professors: D. Douglas Coughenower, Curtis L. Kerns, Brian C. Paust, Craig S. Wiese
Assistant Professors: Dolly A. Garza, Henry M. Pennington, Richard G. Steiner
Instructors: Paula J. Cullenberg, T. Mark Willette

School of Management

Michael L. Rice, Dean

The School of Management offers programs of study which provide the foundation for professional careers in private or public, small or complex organizations. The undergraduate programs also provide the basis for graduate study, leading to the opportunity for enhanced business or government careers or for further training as a teacher or researcher in accounting,

business administration, or economics. The graduate program is designed to provide management education for students with a wide variety of undergraduate degrees. The main objective of the school is to prepare literate, articulate and broadly educated business specialists, who are knowledgeable in fundamental economic laws, accounting and information systems, and who are sensitive to interpersonal relationships and the dignity of the individual. The school seeks to provide the technical knowledge of the accounting, economics and management professions while also emphasizing an awareness of our society and its cultural values. All of these programs emphasize the problems and circumstances unique to Alaska including entrepreneurship, venture management, international business, regional economic development, regulation, financial institutions and markets, transportation, natural resource economics, travel industry management, and a comprehensive professional program in accounting.

Acceptance of upper division transfer credits toward major and foundation course requirements for the B.B.A. degree:

Courses taken at a two-year institution, or as a lower-division course in a four-year academic institution, will not be considered as replacements for upper-division course requirements for the B.B.A. degree unless the student can demonstrate a level of knowledge equivalent to material obtained in UAF courses. That level of knowledge will be determined by the department offering the course, and must be supported in writing by the department head.

Admission to 300/400 level B.A. courses are limited to those students with junior standing who have completed all required 100 and 200 level courses in Accounting, Business Administration, Economics and Mathematics.

Undergraduate Degrees — The school grants the following undergraduate degrees: bachelor of business administration with majors in accounting, economics, finance, management, marketing, and travel industry management; bachelor of arts degrees in economics.

Graduate Degrees — The school offers the master of business administration degree and the master of science in resource economics.

Department of Accounting

Faculty

Department Head and Professor: M. Burton Oien
Professors: Milton A. Fink, Henry Wichmann
Associate Professors: Thomas E. Bartlett, Ken Boze, Clifford T. Cox, E. Thomas Robinson

Degrees

Accounting, B.B.A.

Department of Business Administration

Faculty

Department Head and Professor: Peter G. Biesiot
Professors: David B. Hoffman, William G. Phillips, Michael L. Rice
Associate Professors: Marvin J. Andresen, Anne Marie Francesco, John Lehman, Mary Lindahl, Ralph W. Nestor, John N. Taylor, Paul C. Taylor, Howard L. Zach
Visiting Associate Professor: Oliver Yau
Assistant Professors: Joseph Ben-Ur, Laura M. Milner, R. Kelley Pace
Adjunct Assistant Professor: Cory R. Borgeson
Lecturers: Charles W. Dexter, Richard W. Hompesch II

Degrees

Business Administration, B.B.A.
Finance
International Business
Management
Marketing
Travel Industry Management
Business Administration, M.B.A.
Computer Information Systems (minor only)

Department of Economics

Faculty

Department Head and Assistant Professor: Monica Thomas
Professors: Wayne C. Thomas, Richard J. Solie (Adjunct)
Associate Professors: J. Patrick O'Brien, Yeung-nan Shieh
Assistant Professors: John Boyce, Chris Fawson, Kristen Keith, Robert R. Logan
Visiting Assistant Professors: Richard Adu-Asamoah, Yong Glasure, Steven T. Yen

Degrees

Economics, B.A., B.B.A.
Resource Economics, M.S.

School of Mineral Engineering

Donald J. Cook, Dean

The emergence and progress of human society is marked by passage from one metal age to another. The keystone to our present economy is measured in minerals and energy and it would be difficult to conceive of a modern life without them. Within the career fields of minerals and energy, the opportunities are limited only by a person's ability to apply engineering principles in new and imaginative ways.

The School of Mineral Engineering is composed of the Department of Mining and Geological Engineering, the Department of Petroleum Engineering, the Mineral Industry Research Laboratory, the Petroleum Development Laboratory and the Mining Extension Programs.

Emphasis is placed upon engineering as it applies to the exploration, development and exploitation of mineral and energy resources in the education and training of the undergraduate and graduate students who will be tomorrow's leaders in these industries.

Undergraduate Degrees - The School of Mineral Engineering offers programs of study leading to the bachelor of science degree in geological, mining and petroleum engineering. The geological and mining programs are accredited by the Accreditation Board for Engineering and Technology (ABET) which is the organization responsible for guaranteeing standards and quality in nation wide engineering schools.

Graduate Degrees - Graduate-level programs are also offered in geological engineering, mining engineering, mineral preparation engineering and petroleum engineering in conjunction with the research activities of the Mineral Industry Research Laboratory (MIRL) and the Petroleum Development Laboratory (PDL).

Department of Mining and Geological Engineering

Faculty

Department Head and Associate Professor: R.C. Speck
Professors: P.D. Rao; F.J. Skudrzyk
Associate Professors: S. Bandopadhyay, S.L. Huang, N.I. Johansen, P.E.; M. Sengupta, P.E.
Assistant Professor: H.K. Lin, P. Metz
Instructor: D. Walsh, P.E.
Visiting Associate Professor: W. G. Willson

Degrees

Geological Engineering, B.S., M.S.
Mineral Preparation Engineering, M.S.
Mining Engineering, B.S., M.S., E.M.

Department of Petroleum Engineering

Faculty

Department Head and Associate Professor: R.D. Ostermann

Professor: G.D. Sharma
Assistant Professors: K. Dehghani, V. Kamath, D. Ogbe, S. Saleh

Degrees

Petroleum Engineering, B.S., M.S.

General University Requirements for Undergraduate Degrees

Requirements	Associate Degree	Bachelor's Degree
Minimum Number of Credits Required	60 credits	120 credits
Credits that Must be Earned at UAF *(residence credit)*	15 of the last 30 credits	30 of the last 36 credits
Upper Division Credit *(Courses with numbers between 300 and 499)*		42 credits total (some degrees require more); of the 42 credits, 24 must be earned at UAF
Additional Credit that Must be Earned at UAF by Transfer Students		12 credits in the major; 3 credits in the minor
Grade Point Average Required	2.00 cumulative and in major	2.00 cumulative and in major and minor
Minimum Grades Required for Major	No grade lower than "C" in courses required for major	No grade lower than "C" in courses required for major
Correspondence Study Courses	Maximum of 15 credits accepted for degree	Maximum of 32 credits credits accepted for degree
Catalog Year that Can be Used to Meet Requirements	May use catalog in effect when admitted to the major or when graduating - 5 year limit on catalog year	May use catalog in effect when admitted to the major or when graduating - 7 year limit on catalog year
Second Degree Requirements	Only one AA degree may be earned; 12 credits beyond first A.A.S. degree and all requirements for the second major must be met	24 credits beyond the first bachelor's degree and all requirements for the second degree must be met

Degree Requirements

To receive a degree from the University of Alaska Fairbanks, a student must satisfy three sets of requirements: general university requirements, degree requirements, and program (major) requirements. General university requirements and degree requirements are described in this section of the catalog; requirements of the major are given in the Degree Programs section.

General University Requirements

The minimum number of credits which must be earned, including those accepted by transfer, is 60 semester hours for an associate degree and a minimum of 120 semester hours for any bachelor's degree awarded at UAF. A minimum of 42 upper division credits is required for any bachelor's degree awarded at UAF.

At least 15 of the final 30 semester hours for any associate degree must be earned at UAF. For a bachelor's degree, a student must earn in residence at UAF at least 24 credits in upper-division courses and at least 30 of the last 36 credits for the degree. Transfer students will ordinarily be required to earn at UAF a minimum of 12 semester credits in each major field and a minimum of three semester credits in each minor field for the baccalaureate degree. Credit by examination does not qualify for residence credit.

A minimum GPA of 2.00 (C) must be attained in all work as well as in the major and minor fields. In addition, a minimum grade of "C" must be earned in the courses required for the major.

In order to receive a second associate of applied science degree, a minimum of 12 credit hours must be earned beyond the first associate degree as well as all requirements for the major. As long as the additional 12-hour requirement has been completed, two degrees may be awarded in the same semester.

A UAF graduate wishing to obtain a second bachelor's degree must complete a minimum of 24 hours of credit beyond the first bachelor's degree. All general university requirements, degree requirements, and requirements of the major must be met for both degrees.

A student who holds a bachelor's degree from a college or university other than UAF must apply for admission as a transfer student. All general university requirements, including residency requirements, degree requirements, and requirements of the major must be met.

A student enrolled in an undergraduate degree program may elect to graduate under the requirements of the UAF catalog in effect during the year of graduation or in effect at the time he/she originally enrolled in the major, providing there has not been a time lapse of more than seven years for a baccalaureate degree and five years for an associate degree. Only one catalog can be used for each degree.

Certification that the major (and minor, if any) requirements have been met is the responsibility of the faculty of the student's department or program. Department/program heads will indicate such certification in writing to the director of Admissions and Records.

A maximum of 15 semester hours of work completed by correspondence may be accepted toward an associate degree and 32 semester hours may be accepted toward a bachelor's degree. Students wishing to use credits from correspondence courses toward degree requirements must obtain approval of courses by the dean of the school or college from which they expect to graduate. Students not receiving prior approval for such courses take the risk of not having the courses accepted.

Since English 211 and 213 are primarily courses in writing, either will satisfy the second half of the requirement in written communication for the bachelor's degree. Students may not enroll in English 211 or 213 without having fulfilled the English 111 requirement in one of the following ways: complete the course with a passing grade; challenge the course successfully; earn an English ACT score of 26 or higher; present a CEEB APT score in English of 3 or higher.

Residence Credit

Residence credit is defined as UAF credit that is earned by a student in formal classroom instruction, correspondence study, distance delivered courses, individual study or research through any unit of UAF. Transfer credit, advanced placement credit, formal service school credit, military service credit and credit granted through nationally prepared examinations are not considered residence credit. Credit by examination earned through locally prepared tests is not considered residence credit.

Certificate Programs

Certificate programs may vary in length and reflect the needs of the individual department. However, certificate programs can usually be completed during one year.

CERTIFICATE REQUIREMENTS

To receive a certificate, students may enroll in any course for which they meet the requirements; however, to enroll in a certificate program, and before receiving a certificate, students must formally be admitted.

The minimum number of credits which must be earned, including those accepted by transfer, are 30 semester credits for a certificate. Fifteen semester hours must be residence credits. A grade point average of 2.0 must be attained in all work as well as in the major field.

	Credits
Specialty requirements and approved electives	30

Majors Available for Certificate Programs: Airframe and Powerplant, Applied Mining Technology, Community Health Aide, Culinary Arts, Diesel/Heavy Equipment Mechanics, Drafting Technology, Early Childhood Development, Fire Science, Office Professions.

Associate Degrees

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

ASSOCIATE OF ARTS REQUIREMENTS

The Associate of Arts degree is intended to provide students with a basis of general education in order to undertake baccalaureate degree work and is non-specific in intent. A student may earn only one A.A. degree.

	Credits
Written Communication (Engl. 111 plus Engl. 211 or 213)	6
Oral Communication	3
Humanities Electives	9
Social Science Electives	9
Mathematics and/or Natural Science Electives	9

Applied Studies Electives 9
General Electives 15
Total 60

Of the total 60 credits, all must be at the 100 level or above and 20 credits must be at the 200 level.

Course Classifications — Associate Degree Program

Humanities:
American Sign Language
Art
English
Humanities
Languages
Literature
Philosophy
Religion (selected courses)
Theater
Dance
History*
Journalism
Linguistics
Music
Photography
Speech and Public Communication

Social Sciences:
Anthropology
Business Law
Economics
History*
Psychology
Behavioral Science
Counseling
Geography
Political Science
Sociology

*History may be applied to either Social Science or Humanities for the associate degree, but not both. It counts *only* as a social science for the baccalaureate degree.

Mathematics and Logic:
All mathematics, statistics and logic courses.

Natural Sciences:
Biology, Biological Science
Geology
Physical Geography
Physics
Chemistry
Physical Anthropology
Physical Sciences

Applied Studies
Accounting
Airframe and Powerplant
Aviation Technology
Computer Applications
Counseling
Diesel/Heavy Equipment
Early Childhood Development
Electronics
Fire Science
Home Economics
Library Science
Mechanics
Military Science
Nursing/Health Science
Office Occupations
Petroleum
Public Safety**
Waste Water Technology
Agriculture
Alaskan Studies
Business Administration
Construction
Culinary Arts
Drafting Technology
Education
Emergency Medical Training
Fisheries/Wildlife Mgmt
Justice
Management
Meteorology
Mining
Nutrition
Personal Development
Phys. Educ./Recreation
Trade and Technology
Welding

**Includes Corrections, Fire Science, Justice, Law and Police Administration.

ASSOCIATE OF APPLIED SCIENCE REQUIREMENTS

The Associate of Applied Science degree is awarded in a specific occupational field of study with emphasis on entry into a job market. This degree, usually seen as a terminal degree, can serve as the basis for additional training.

	Credits
Written Communication (Engl. 111 plus any 200-level written communications course or applied written communciations course as approved by the head of the program in which the degree is earned.)	6
Oral Communication	3
Select a total of 6 credits from humanities, social science, mathematics or natural science (At least 3 credits shall be math or natural science at the 100 level or above.)	6
Major Specialty	at least 30
Electives to total	60

Majors Available for A.A.S. Degree: Airframe and Powerplant, Applied Accounting, Applied Business, Aviation Technology, Community Health Practitioner, Culinary Arts, Early Childhood Development, Early Childhood Education, Financial Institutions Management, Office Professions, Paraprofessional Counseling, Public Safety-Fire Science. Temporarily suspended are A.A.S. degree programs in Drafting Technology, Electronic Technology, Petroleum Technology, Public Safety-Justice, Resource Information Technology and Yupik Language.

(Requirements of majors listed are in the Degrees and Programs section of this catalog.)

Baccalaureate Degrees

BACHELOR OF ARTS REQUIREMENTS

Communication:	*Credits*
English 111 or equivalent, and English 211 or 213†	6
Speech Communication	3

Humanities:†
Any combination of courses at the 100 level or above, selected from at least 3 disciplines exclusive of major/minor, with a maximum of 9 credits from any one discipline 18

Social Sciences:
Any combination of courses at the 100 level or above, selected from at least 3 disciplines exclusive of major/minor, with a maximum of 9 credits from any one discipline 18

Mathematics and Logic:
Any combination of courses at the 100 level or above from the Department of Mathematical Sciences (Mathematics, Computer Science and Statistics), or Philosophy 204 6

Natural Sciences:
Any combination of courses at the 100 level or above which includes at least one laboratory course 7

Major Complex* .....At least 30**

Minor Complex* .....At least 12**

Minimum credits required for degree 120***

Of the above, at least 48 credits must be obtained in the upper division (300 level or higher) courses.

*Courses specified by a major or minor complex which are not in the primary discipline of that complex may be used to fulfill the Humanities, Social Sciences, Mathematics and Logic, or Natural Sciences distribution requirements.
**Departmental requirements for majors and minors may exceed the minimums indicated. Specific requirements are listed in the Degree Programs section of this catalog.
***Most degree programs require 130 credits. See specific requirements listed in Degree Programs section of this catalog.

Majors Available for B.A. Degree: Alaska Native Studies, Anthropology, Art, Biological Sciences, Chemistry, Earth Sciences, Economics, English, Eskimo, Foreign Language, Geography, History, Humanities, Human Services, Interdisciplinary Studies, Journalism, Justice, Linguistics, Mathematics, Music, Northern Studies, Philosophy, Physical Education, Physics, Political Science, Psychology, Rural Development, Russian Studies, Social Work, Sociology, Speech Communications, Theater.

(Requirements of majors are listed in the Degree Programs section of this catalog.)

†Neither English 313 nor 314 will fulfill the second half of the written communication requirement.

Minors Available for B.A. Degree: Accounting, Alaska Native Languages, Alaska Native Studies, Athletic Coaching, Citizens' Law, Computer Information Systems, Computer Science, Anthropology, Art, Asian Studies, Biological Sciences, Business Administration, Chemistry, Economics, Secondary Education, Elementary Education, English, Eskimo, French, Geography, Geology, German, History, Humanities, Human Services, Japanese, Journalism, Justice, Linguistics, Mathematics, Military Science, Music, Philosophy, Physics, Physical Education, Political Science, Psychology, Russian, Russian Studies, Sociology, Spanish, Speech Communications, Statistics, Theater, Travel Industry Management.

The following associate degree programs are approved as minors for the bachelor of arts degree: Applied Business, Aviation Technology, Culinary Arts, Early Childhood Development, Fire Science, Office Professions and Paraprofessional Counseling.

Double Major — A Bachelor of Arts degree candidate may complete two majors rather than a major and a minor. The majors must be selected from those approved for the Bachelor of Arts degree and all general requirements plus all requirements for both majors must be completed. If one major is from a program where 120 total credits are required and the other major is from a program where 130 credits are required, the student will be expected to complete 130 credits. The student completing a double major must officially declare both majors either at the time of admission and/or through the change of major procedure. The student will be expected to follow the degree requirements as listed in the catalog in effect at the time the first major is officially declared or from the catalog in effect the year of graduation.

Double Degrees — A student wishing to complete more than one bachelor's degree at UAF must complete all general requirements as well as all major, and minor, if any, requirements for all degrees. A minimum of 24 semester hours of credit beyond the total required for the first degree must be earned before any additional degrees can be awarded. The student may use the catalogs in effect at the time majors are officially declared or the catalogs in effect at the time of graduation. In other words, for two degrees that are completed at the same time, a student may be following requirements from two different catalogs.

BACHELOR OF SCIENCE REQUIREMENTS *Credits*

Communications
English 111 or equivalent and
English 211 or 213†.....6
Speech Communication.....3

Mathematics
One semester of college-level Calculus, Math. 203, or Statistics 301.....3 or more

Natural Science
Chemistry, Biology, Geoscience (Solid Earth Sciences), or Physics (minimum of 6 credits each in two disciplines), including 2 credits of laboratory.....16

Social Science/Humanities†
Social Science (minimum of 3 credits) and Humanities (minimum of 3 credits), exclusive of 9-credit communications requirement.....15

Major Complex (see departmental curricula for specific requirements and for Minor Complex, if required)..... at least 30*

Minimum credits required for degrees.....120**

*Departmental requirements for majors and minors may exceed the minimums indicated. Specific requirements are listed in the Degrees and Programs section of this catalog.

**Most degree programs require 130 or more credits. See specific requirements listed in Degree Programs sections of the catalog.

Majors Available for B.S. Degree: Anthropology, Applied Physics, Biological Sciences, Chemistry, Civil Engineering, Computer Science, Electrical Engineering, Fisheries Science, General Science, Geography, Geology, Geological Engineering, Interdisciplinary Studies, Mathematics, Mechanical Engineering, Mining Engineering, Natural Resources Management, Petroleum Engineering, Physics, Physical Education, Psychology, Sociology, Statistics, Wildlife Management.

(Requirements of majors listed in the Degrees and Programs section of this catalog.)

Double Major — A Bachelor of Science degree candidate may complete a double major instead of a single major. The majors must be selected from those approved for the Bachelor of Science degree and all general requirements plus all requirements for both majors must be completed. The student completing a double major must officially declare both majors either at the time of admission and/or through the change of major procedure. The student will be expected to follow the degree requirements as listed in the catalog in effect at the time the first major is officially declared or from the catalog in effect the year of graduation.

Optional Minor — A student may elect to complete a minor with the B.S. degree under the following circumstances:

1. The minor must be declared before the beginning of the student's final semester in the B.S. degree program. A "Declaration of Minor" form must be filed with Admissions and Records by the end of the registration period.
2. Any minor approved for the B.A. degree may serve as a minor for the B.S. degree. All general and specific requirements for minors are the same as those listed for B.A. degree minors, including that courses used to meet minor requirements may not be used to meet major or general distribution requirements. The catalog used for the minor must be the same as used for the major and general degree requirements.
3. Requirements for the minor must be satisfactorily completed before the B.S. degree is awarded. The minor then will be listed on the student's permanent academic record along with the recording of the B.S. degree.

BACHELOR OF TECHNOLOGY REQUIREMENTS *Credits*

*Must have completed an associate degree in a technical specialty (Associate of Technology, Associate of Applied Science). Students holding associate degrees of less technical depth (Associate of Arts) must make up the equivalent technical deficiencies before being admitted to the Bachelor of Technology degree program..... 60 or more

Communication (may have been taken as part of the associate degree):
Engl. 111 and Engl. 211 or 213†.....6
Oral Communication.....3

General Education (courses taken as part of the associate program are acceptable):

credits in one area, 6 credits in a second area and 3 credits in each of the two other areas: Social Sciences, Humanities, Natural Science, Mathematical Science (Mathematics, Computer Science, Statistics)†.....24

Major Complex (must be beyond associate degree major, 30 credits):
Upper-division credits in technical specialty..... 0-12
Complementary area..... 24-30
Minimum credits required for degree.....130

A minimum of 65 credits must be earned beyond those applied to the associate degree. Twenty-four upper division credits must be earned at UAF. All credits must be 100-level or above.

Major Complex Available for the B.T. Degree: Education.

†Neither English 313 nor 314 will fulfill the second half of the written communication requirement.

The following technical specialties have been approved as acceptable associate degree programs for admission to the Bachelor of Technology degree program in Education:

Aviation Technology
Culinary Arts
Electronics Technology

BACHELOR OF BUSINESS ADMINISTRATION REQUIREMENTS

Communications	*Credits*
Engl. 111	3
Engl. 211 or 213†	3
Sp.C. Elective	3
Social Science	
Psy. 101 or Soc. 101	3
P.S. 101 or 102	3
Econ. 201 and 202	6
History elective	3
Social Science elective	3
Natural Science & Mathematics	
Natural Science elective (including 1 cr. of lab)	4
Math. 161 and 162	7
Humanities	
Humanities elective†	6
(In addition to 3 credits of speech elective taken under "Communications" above)	
Major Complex and Common Body of Knowledge	
See department curricula for specific requirements.	
Minimum Credits Required for Degree	120**

**Most degree programs require 130 credits. See specific requirements listed in Degree Programs section of the catalog.

Majors Available for B.B.A. Degree: Accounting, Economics, Business Administration (Finance, International Business, Management, Marketing, Travel Industry Management).

(Requirements of majors are listed in the Degree Programs section of this catalog.)

BACHELOR OF EDUCATION REQUIREMENTS
See under Education in Degree Programs section.

BACHELOR OF MUSIC REQUIREMENTS
See under Music in Degree Programs section.

BACHELOR OF FINE ARTS REQUIREMENTS
B.F.A. general requirements are the same as the requirements for the B.A.
Major Available for B.F.A. Degree: Art.

Course Classification Identification

Courses that may be used in satisfying general degree requirements (e.g., Social Science Elective, Written Communication, etc.) are identified in the course description publication by the following designators:

h - Humanities	o - Oral Communication
m - Mathematics	s - Social Science
n - Natural Science	w - Written Communication

For example, Hist. 341, History of Alaska, (3+0)s, may be utilized to satisfy the "social science elective" requirement. Engl. 111, Methods of Written Communication, (3+0)w, may be used to meet the written communication general degree requirement. Note: Special topics courses are not given course classifications.

Academic Petition

Any deviation from academic requirements and regulations for undergraduate students must be approved by academic petition. A petition form, which requires the signatures of the student's adviser, unit head, and dean, may be obtained from the Office of Admissions and Records.

Petitions to waive general university or degree requirements must be approved by the Vice Chancellor for Academic Affairs. Such petitions first must be submitted to the Office of Admissions and Records.

Graduation

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

Application for Graduation — Degree candidates must formally apply for graduation. The application for graduation must be filed with the Office of Admissions and Records during the semester the student plans to graduate, and not later than the application filing dates which appear in the UAF academic calendar.

Applications for graduation filed after the deadline date will be processed for graduation the following semester.

Diplomas and Commencement — UAF issues diplomas to degree candidates three times each year: in September following the summer session, in January at the close of the fall semester, and in May at the end of the spring semester.

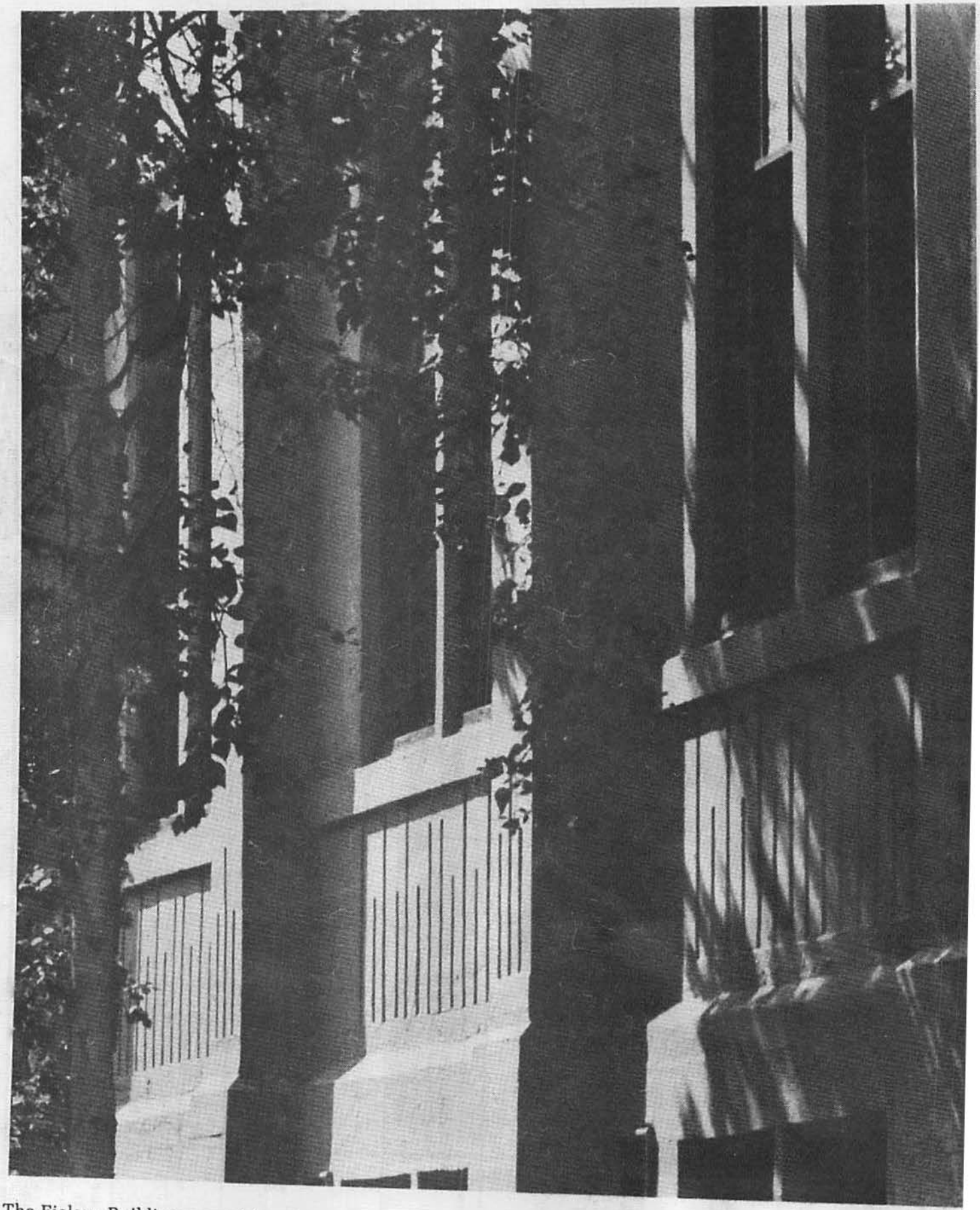
All students who complete degree requirements during the academic year are invited to participate in the annual commencement ceremony which follows the spring semester.

Graduation with Honors — In order to graduate with honors, an undergraduate student must have earned a cumulative grade point average in all college work attempted at UAF of 3.5 or higher. In addition, a transfer student must have completed 48 semester hours of credit at UAF for a baccalaureate degree or 24 semester hours of credit at UAF for an associate degree. The cumulative grade point average in all college work attempted at all other institutions attended combined with the UAF cumulative grade point average must not be less than 3.5.

Students with cumulative grade point averages of 3.5 will be graduated *cum laude*; 3.8, *magna cum laude*; 4.0, *summa cum laude*, provided they meet the requirements stated above.

BACCALAUREATE DEGREE REQUIREMENTS IN BRIEF

ACADEMIC DISCIPLINE	Bachelor of Arts	Bachelor of Science	Bachelor of Bus. Admin.	Bachelor of Education	Bachelor of Music	Bachelor of Technology	ACADEMIC DISCIPLINE
Written Communication	Engl 111 - 3 cr Engl 211 or 213 - 3 cr	Engl 111 - 3 cr Engl 211 or 213 - 3 cr	Engl 111 - 3 cr Engl 211 or 213 - 3 cr	Engl 111 - 3 cr Engl 211 or 213 - 3 cr	Engl 111 - 3 cr Engl 211 or 213 - 3 cr	Engl 111 - 3 cr Engl 211 or 213 - 3 cr	Written Communication
Oral Communication	Sp.C. elective - 3 cr	Sp.C. elective - 3 cr	Sp.C. elective - 3 cr	Sp.C. elective - 3 cr	Sp.C. elective - 3 cr	Sp.C. elective - 3 cr	Oral Communication
Humanities	18 credits in any combination of courses at the 100 level or above selected from at least 3 disciplines with a maximum of 9 credits from any one discipline in both humanities and social science areas - 36 cr	15 credits including at least 3 credits from each area	Electives - 6 cr	Electives - 9 cr Ling. 101 or ANL 215 or 216 - 3 cr	Non-Music elect - 15 cr	Gen. Educ. - 24 cr (12 cr in one area, 6 cr in 2nd area, and 3 cr in each of other two areas) Courses taken as part of associate program are accepted.	Humanities
Social Science			History - 3 cr Psy 101 or Soc 101 - 3 cr P.S. 101 or 102 - 3 cr Econ 201, 202 - 6 cr Electives - 3 cr	Anth. 242 - 3 cr Hist. 131 or 132 - 3 cr Hist. Elect. - 3 cr P.S. 101 - 3 cr P.S. 263 or ANS 310 - 3 cr Psy 101 - 3 cr Psy 240 - 3 cr Elective - 3 cr	Electives - 15 cr (Psy 101 - 3 cr required for Mus. Educ.)		Social Science
Natural Science	Any combination of courses at the 100 level or above which includes one lab course - 7 cr	Chem, Biol, Geol, or Physics - 16 cr (6 cr in each of 2 disciplines incl. 2 cr of lab)	Nat. Sci - 4 cr (including 1 cr of lab)	Elementary: Math 205 - 3 cr Math Elect. - 6 cr Science Elect. - 7 cr (incl. lab science)			Natural Science
Mathematics	Mathematics and Logic: any combin. of courses at the 100 level or above from the Dept. of Mathematical Sciences (Math, Computer Sci, or Phil. 204) - 6 cr	One semester college level calculus, Math 203 or AS301 - 3 or more cr	Math 161-162 - 7 cr	Secondary: Math Elective - 6 cr Science Elect. - 7 cr (incl. lab science) Math or Science Elective - 3 cr			Mathematics
Other	Of the total credits required for the degree, 48 must be upper-division (300 or 400 level) courses	42 cr must be upper-division (300-400 level) courses	42 cr must be upper-division (300-400 level) courses Common body of knowledge - 33 cr	Education and other - 42-51 cr 42 cr must be upper-division (300-400 level) courses		65 cr must be earned beyond assoc. degree, including a minimum of 30 cr in major complex. 42 cr must be upper-division (300-400 level) courses	Other
Major Complex or Specialty	At least 30 credits	Variable	33-42 cr	Elementary concentration - 24 cr or more Secondary integrated major/minor - 45 - 48 cr	Variable		Major Complex or Specialty
Minor Complex	At least 12 credit						Minor Complex



The Eielson Building, named for pioneer Alaskan aviator Ben Eielson, reflects the summer sun.

Degrees and Programs

Cert.—Certificate
A.A.—Associate of Arts
A.A.S.—Associate of Applied Science
B.A.—Bachelor of Arts
B.B.A.—Bachelor of Business Administration
B.Ed.—Bachelor of Education
B.F.A.—Bachelor of Fine Arts
B.M.—Bachelor of Music
B.S.—Bachelor of Science
B.T.—Bachelor of Technology
Ed.S.—Educational Specialist
E.M.—Engineer of Mines
M.A.—Master of Arts
M.F.A.—Master of Fine Arts
M.S.—Master of Science
M.A.T.—Master of Arts in Teaching
M.B.A.—Master of Business Administration
M.C.E.—Master of Civil Engineering
M.Ed.—Master of Education
M.E.E.—Master of Electrical Engineering
Ph.D.—Doctor of Philosophy

Accounting, B.B.A.
(see also Applied Accounting)
Airframe and Powerplant, Cert., A.A.S.
Alaska Native Languages
(minor only)
Alaska Native Studies, B.A.
Anthropology, B.A., B.S., M.A., Ph.D.
Applied Accounting, A.A.S.
Applied Business, A.A.S.
Applied General Business, A.A.S.
Applied Mining Technology, Cert.
Applied Physics, B.S.
Arctic Engineering, M.S.
Art, B.A., B.F.A.
Asian Studies (minor only)
Associate of Arts, A.A.
Athletic Coaching (minor only)
Atmospheric Sciences, M.S., Ph.D.
Aviation Technology, A.A.S.

Biological Sciences, B.A., B.S.
Biology, M.S., M.A.T., Ph.D.
Botany, M.S.
Business Administration, B.B.A.
- Finance
- International Business
- Management
- Marketing
- Travel Industry Management

Business Administration, M.B.A.
(see also Applied Business)

Chemistry, B.A., B.S., M.A., M.S., M.A.T.
Citizens' Law (minor only)
Civil Engineering, B.S., M.C.E., M.S.
Community Health Aid, Cert., A.A.S.
Community Psychology, M.A.
Computer Information Systems (minor only)
Computer Science, B.S., M.S.
Culinary Arts, Cert., A.A.S.

Diesel/Heavy Equipment Mechanics, Cert.
Drafting Technology, Cert.

Early Childhood Development, Cert., A.A.S.
Early Childhood Education, A.A.S.
Earth Science, B.A.
Economics, B.A., B.B.A.
Education, B.Ed.
- Elementary
- Secondary

Education, B.T.
- Secondary

Education, Ed.S.
- Cross-Cultural Studies
- Public School Administration

Education, M.Ed.
- Cross-Cultural
- Curriculum and Instruction
- Educational Leadership
- Language and Literacy

Electrical Engineering, B.S., M.S., M.E.E.
Engineering Management, M.S.
English, B.A.
- Forms and Techniques of Writing
- Literature
- Teaching

English, M.A., M.F.A.
- Creative Writing, M.F.A.
- English, M.A.
- Professional Writing, M.A.

Environmental Quality Engineering, M.S.
Environmental Quality Science, M.S.
Eskimo, B.A.
- Inupiaq Eskimo
- Yupik Eskimo

Financial Institutions Management, A.A.S.
Fire Science, Cert., A.A.S.
Fisheries, B.S.
- Research
- Management

Fisheries Science, M.S.
Foreign Languages, B.A.
- French
- German
- Russian
- Spanish

General Science, B.S., M.S.
Geography, B.A., B.S.
Geological Engineering, B.S., M.S.
Geology, B.S.
- Economic Geology
- General Geology
- Petroleum Geology
- Solid Earth Geophysics

Geology, M.A.T.
Geology, M.S.
- Economic Geology
- General Geology
- Petroleum Geology

Geology, Ph.D.
Geophysics, M.S.
- Snow, Ice and Permafrost Geophysics
- Solid Earth Geophysics

Geophysics, Ph.D.
Guidance and Counseling, M.Ed.
- Elementary
- Secondary

History, B.A., M.A.T.
Humanities, B.A.
Human Services, B.A.

Interdisciplinary Studies Option, B.A., B.S., M.A., M.S., Ph.D.
Journalism, B.A.
- Broadcast
- News-Editorial

Justice, B.A.

Linguistics, B.A.

Marine Biology, M.S.
Mathematics, B.A., B.S., M.S., M.A.T., Ph.D.
Mechanical Engineering, B.S., M.S.
Military Science/Army ROTC (minor only)
Mineral Preparation Engineering, M.S.
Mining Engineering, B.S., M.S., E.M.
(see also Applied Mining Technology)
Music, B.A.
Music, B.M.
- Music Education
- Performance

Music, M.A.
- Alaska Ethnomusicology
- Music Education
- Music History
- Performance
- Theory/Composition

Music, M.A.T.

Natural Resources Management, B.S.
- Agriculture
- Forestry

Natural Resources Management, M.S.
Northern Studies, B.A.

Oceanography, M.S., Ph.D.
Office Professions, Cert., A.A.S.

Paraprofessional Counseling, A.A.S.
Petroleum Engineering, B.S., M.S.
Philosophy, B.A.
Physical Education, B.A., B.S.
Physics, B.A., B.S., M.S., M.A.T., Ph.D.
Political Science, B.A.
Psychology, B.A., B.S.

Resource Economics, M.S.
Rural Development, B.A.
- Applied Land Management
- Community Organizations and Services
- Community Research and Cultural Documentation
- Local Government Administration
- Village Corporation Management

Russian Studies, B.A.

Science Management, M.S.
Social Work, B.A.
Sociology, B.A., B.S.
Space Physics, M.S., Ph.D.
Speech Communication, B.A.
Statistics, B.S.

Theater, B.A.

Wildlife Management, B.S.
- Management Biology
- Research Biology

Wildlife Management, M.S., Ph.D.

Zoology, M.S., Ph.D.

Accounting

School of Management
Department of Accounting

Degree: B.B.A.
Minimum Requirements for Degree: 130 credits

The accounting department offers an extensive program for those interested in the fields of general accounting, auditing, managerial accounting and taxation. The objectives of the program are to provide a strong business background through an understanding of accounting and to train students for employment in accounting work.

Requirements

Accounting — B.B.A. Degree
1. Complete general university requirements and B.B.A. degree requirements.
2. Complete the following statistics requirements:

Econ. 226 — Intro. to Statistics for Economics and Business	3
Econ. 227 — Intermediate Statistics for Economics and Business	3

3. Complete the following program (major) requirements:

Common Body of Knowledge Requirements	Credits
Acct. 101, 102 — Elementary Accounting	6
Acct. 316 — Acct. Information Systems	3
B.A. 101 — Intro. to Management Information Systems	3
B.A. 325 — Financial Management	3
B.A. 331 — Business and Law	3
B.A. 343 — Principles of Marketing	3
Econ. 324 or 350 — Intermediate Macroeconomics/ Money & Banking	3
B.A. 360 — Operations Management	3
B.A. 390 — Organizational Behavior	3
B.A. 462 — Administrative Policy	3
Accounting — General Requirements	
Econ. 321 — Intermediate Microeconomics	3
B.A. 332 — Advanced Topics in Business and Law	3
Accounting — Major Requirements	
Acct. 310 — Income Tax	3
Acct. 342 — Managerial Cost Accounting	3
Acct. 361, 362 — Intermediate Accounting	6
Acct. 401 — Advanced Accounting	3
Acct. 404 — Controllership and International Accounting	3
Acct. 452 — Auditing	3
Two of the following:	
Acct. 403 — Advanced Taxes	3
Acct. 405 — Contemp. Issues in Accounting	3
Acct. 472 — Computer Control and Adv. Auditing	3
Acct. 473 — Applied Systems Design	3
Free Electives	14
(of which a maximum of 3 credits may be taken in accounting and 6 credits in business administration or economics.)	
4. Minimum credits required	130

MINOR in Accounting:	Credits
Acct. 101 — Elementary Accounting	3
Acct. 102 — Elementary Accounting	3
Acct. 310 — Income Tax	3
Acct. 361 — Intermediate Accounting	3
Acct. 342 — Managerial Cost Accounting	3
Another 300- or 400-level accounting course	3

Airframe and Powerplant

School of Career and Continuing Education
Trade and Industry Department

Certificate in Airframe and Powerplant; **Degree:** A.A.S.
Minimum Requirements for Degree — 60 credits; for Certificate — 30 credits

The airframe and powerplant department offers an associate of applied science degree (A.A.S.) and three certificate programs. Students may choose to earn a certificate in airframe, powerplant, or airframe and powerplant. Admission to this program is at the discretion of the program faculty and requires an interview with the faculty adviser.

After receiving an airframe and powerplant certificate, students may elect to complete the associate of applied science degree in airframe and powerplant. In order to enhance employability, students are encouraged to complete the associate degree program.

Requirements

Airframe and Powerplant — A.A.S. Degree

1. Complete the following general degree requirements:	
Written Communication	6
(Engl. 111 plus any 200-level written communications course or applied written communications course as approved by the head of the program in which the degree is earned.)	3
Oral Communication	
Select a total of 6 credits from the following areas: humanities, social science, mathematics or natural science	6
(At least 3 credits shall be math or natural science at the 100 level or above.)	15
Subtotal	
2. Complete the following major degree requirements:	
Same as Airframe and Powerplant Certificate Program	49
Degree Total	64

Airframe and Powerplant — Certificate

The airframe and powerplant mechanics certificate program allows students to complete requirements for the Federal Aviation Administration mechanics' certificate with both airframe and powerplant ratings in as little as one year. This program is a one-year course, usually starting at the beginning of June. Entry at other times is allowed only with departmental approval.

While this program covers many major subject areas, special emphasis is placed on those skills most sought after in the Alaska job market. This intensive curriculum uses classroom and "hands on" laboratory instruction to prepare students for entry into the aviation field. After completing the program, students are eligible to take the Federal Aviation Administration examinations for the airframe and powerplant ratings. This qualifies program graduates for entry level positions in the maintenance, repair, overhaul and modification of aircraft.

NOTE: All courses are scheduled between 7:40 a.m. and 4:10 p.m. Monday through Friday.

Airframe and Powerplant Certificate Program and Suggested Course Sequence

Summer Semester	Credits
AFPM 145 — Basic Mathematics	1.0
AFPM 146 — Basic Electricity	2.0
AFPM 147 — Physics for Mechanics	0.5
AFPM 148 — Aircraft Drawing	1.0
AFPM 149 — Fluid Lines and Fitting	0.5
AFPM 150 — Materials and Processes	2.0
AFPM 151 — Cleaning and Corrosion Control	1.0
AFPM 152 — Federal Aviation Regulations	1.0
AFPM 153 — Weight and Balance	1.0
AFPM 154 — Aircraft Ground Operations and Servicing	0.5
AFPM 251 — Fuel Systems	1.5
AFPM 255 — Fire Protection Systems	0.5
AFPM 257 — Instrument Systems	0.5
Total	13.0

Fall Semester	Credits
AFPM 231 — Powerplant Electrical Systems	1.5
AFPM 235 — Aircraft Reciprocating Engines	5.0
AFPM 240 — Turbine Engines	1.5
AFPM 250 — Powerplant Exhaust Systems	0.5
AFPM 254 — Ice and Rain Control Systems	0.5
AFPM 256 — Communication/Navigation Systems	0.5
AFPM 258 — Cabin Atmosphere Control Systems	1.0
AFPM 259 — Hydraulic and Pneumatic Systems	1.5
AFPM 261 — Wood Structures	0.5
AFPM 264 — Sheet Metal Structures	3.5
AFPM 265 — Aircraft Welding	1.5
Total	17.5

Spring Semester	Credits
AFPM 230 — Aircraft Electrical Systems	2.5
AFPM 244 — Lubrication Systems	1.5
AFPM 245 — Ignition Systems	2.5
AFPM 246 — Fuel Metering Systems	1.5
AFPM 248 — Induction Systems	0.5
AFPM 249 — Powerplant Cooling Systems	0.5
AFPM 252 — Propellers	2.0
AFPM 253 — Position and Warning Systems	0.5
AFPM 260 — Aircraft Landing Gear Systems	2.0
AFPM 262 — Aircraft Coverings	1.0

AFPM 263 — Aircraft Finishes	0.5
AFPM 266 — Assembly and Rigging	1.5
AFPM 267 — Airframe Inspections	0.5
AFPM 270 — Airframe Testing	0.5
AFPM 271 — Powerplant Inspections	0.5
AFPM 272 — Powerplant Testing	0.5
Total	18.5
Certificate Total	49.0

Airframe — Certificate

Students interested in qualifying for an FAA airframe mechanics certificate may choose to earn only the airframe certificate. However, in order to enhance employability, students are encouraged to complete the associate degree program.

Airframe Certificate and Suggested Course Sequence

Summer Semester	*Credits*
AFPM 145 — Basic Mathematics	1.0
AFPM 146 — Basic Electricity	2.0
AFPM 147 — Physics for Mechanics	0.5
AFPM 148 — Aircraft Drawing	1.0
AFPM 149 — Fluid Lines and Fitting	0.5
AFPM 150 — Materials and Processes	2.0
AFPM 151 — Cleaning and Corrosion Control	1.0
AFPM 152 — Federal Aviation Regulations	1.0
AFPM 153 — Weight and Balance	1.0
AFPM 154 — Aircraft Ground Operations and Servicing	0.5
AFPM 251 — Fuel Systems	1.5
AFPM 255 — Fire Protection Systems	0.5
AFPM 257 — Instrument Systems	0.5
Total	13.0

Fall Semester	*Credits*
AFPM 254 — Ice and Rain Control Systems	0.5
AFPM 256 — Communication/Navigation Systems	0.5
AFPM 258 — Cabin Atmosphere Control Systems	1.0
AFPM 259 — Hydraulic and Pneumatic Systems	1.5
AFPM 261 — Wood Structures	0.5
AFPM 264 — Sheet Metal Structures	3.5
AFPM 265 — Aircraft Welding	1.5
Total	9.0

Spring Semester	*Credits*
AFPM 230 — Aircraft Electrical Systems	2.5
AFPM 253 — Position and Warning Systems	0.5
AFPM 260 — Aircraft Landing Gear Systems	2.0
AFPM 262 — Aircraft Coverings	1.0
AFPM 263 — Aircraft Finishes	0.5
AFPM 266 — Assembly and Rigging	1.5
AFPM 267 — Aircraft Inspections	0.5
AFPM 270 — Airframe Testing	0.5
Total	9.0
Certificate Total	31.0

Powerplant — Certificate

Students interested in qualifying for an FAA powerplant mechanics certificate may choose to earn only the powerplant certificate. However, in order to enhance employability, students are encouraged to complete the associate degree program.

Powerplant Certificate and Suggested Course Sequence

Summer Semester	*Credits*
AFPM 145 — Basic Mathematics	1.0
AFPM 146 — Basic Electricity	2.0
AFPM 147 — Physics for Mechanics	0.5
AFPM 148 — Aircraft Drawing	1.0
AFPM 149 — Fluid Lines and Fitting	0.5
AFPM 150 — Materials and Processes	2.0
AFPM 151 — Cleaning and Corrosion Control	1.0
AFPM 152 — Federal Aviation Regulations	1.0
AFPM 153 — Weight and Balance	1.0
AFPM 154 — Aircraft Ground Operations and Servicing	0.5
AFPM 251 — Fuel Systems	1.5
AFPM 255 — Fire Protection Systems	0.5
AFPM 257 — Instrument Systems	0.5
Total	13.0

Fall Semester	*Credits*
AFPM 231 — Powerplant Electrical Systems	1.5
AFPM 235 — Aircraft Reciprocating Engines	5.0
AFPM 240 — Turbine Engines	1.5
AFPM 250 — Powerplant Exhaust Systems	0.5
Total	8.5

Spring Semester	*Credits*
AFPM 244 — Lubrication Systems	1.5
AFPM 245 — Ignition Systems	2.5
AFPM 246 — Fuel Metering Systems	1.5
AFPM 248 — Induction Systems	0.5
AFPM 249 — Powerplant Cooling Systems	0.5
AFPM 252 — Propellers	2.0
AFPM 271 — Powerplant Inspections	0.5
AFPM 272 — Powerplant Testing	0.5
Total	9.5
Certificate Total	31.0

Evening Airframe and Powerplant Program

The evening airframe and powerplant program, offered alternate years, is a two-semester preparatory course for men and women with substantial documented experience in aircraft maintenance who wish federal certification. Admission is open to those with either civilian or military experience.

To enroll, students must receive authorization from the Federal Aviation Administration to take the airframe and/or powerplant mechanics oral, practical and written exams (or be eligible for it by the completion of the course). In order to qualify for this authorization, the applicant must have a minimum of 30 months experience performing duties appropriate to both the airframe and powerplant ratings, or have 18 months experience appropriate to either the airframe or powerplant rating. Upon obtaining the FAA airframe and powerplant certificate, the student may wish to complete the associate degree in airframe and powerplant.

Alternate Fall Semester	*Credits*
AFPM 111 — Basic Airframe and Powerplant	4
AFPM 205 — Fundamentals of Airframe Structures	5
AFPM 206 — Fundamentals of Airframe Systems and Components	3
Total	12

Alternate Spring Semester	*Credits*
AFPM 215 — Powerplant Theory and Maintenance	6
AFPM 216 — Powerplant Structures and Systems	6
Total	12
Evening Program Total	24

Alaska Native Languages

College of Liberal Arts
Department of Alaska Native Languages

Minor only

There are 20 different Alaska Native languages: Aleut, Alutiiq (also called Aleut or Sugpiaq), Central Yupik Eskimo, St. Lawrence Island Eskimo, Inupiaq Eskimo, Tsimshian, Haida, Tlingit, Eyak, and 11 Athabaskan languages. These languages are becoming recognized as the priceless heritage they truly are. Since the passage of the Alaska Bilingual Education Law in 1972 there has been a demand for teachers who can speak and teach these languages in the schools throughout the state where there are Native children. Professional opportunities for those skilled in these languages exist in teaching, research, and cultural, educational, and political development.

Central Yupik Eskimo is spoken by the largest number of people, and Inupiaq by the next largest. In these two languages major and minor curricula are now offered. Courses are also regularly offered in Koyukon Athabaskan. For work in all other languages, individual or small-group instruction is offered under special topics. Thus there have frequently been instruction, seminars, and workshops also in Tlingit, Haida, St. Lawrence Island Eskimo, Aleut and Kutchin, comparative Eskimo and comparative Athabaskan.

UAF is unique in offering this curriculum, which benefits also from the research staff and library of the Alaska Native Language Center.

Requirements

MINOR in Alaska Native Languages:

A minor in Alaska Native languages requires 15 credits in Eskimo or Alaska Native language courses

(See also "Eskimo.")

Alaska Native Studies

College of Liberal Arts
Department of Alaska Native Studies

Degree: B.A.
Minimum Requirements for Degree: 130 Credits

The Alaska Native studies program seeks to provide the student with (1) a keen awareness of the scope, richness, and variety of Alaskan Native cultural heritages, and (2) a series of critical perspectives on the contemporary Native experience in the plural society of North America. The student's academic program will be interdisciplinary as it is built upon a combination of appropriate courses currently offered in other specialized disciplines and of an integrated set of core courses offered by the Alaska Native studies program.

The Alaska Native studies program has been principally designed to offer a second major or a minor for many bachelor's degree candidates. It seeks students from many fields of specialization who anticipate either direct or indirect professional involvement in Alaskan Native communities specifically and in multicultural settings generally. Only under special circumstances reviewed by the head of the program will students be advised to consider Native studies as a sole major, and they will be required to have a substantial minor in a specialized discipline.

Requirements

Alaska Native Studies — B.A. Degree
1. Complete general university requirements and B.A. degree requirements.
2. Complete the following program (major) requirements:

Prerequisites	*15 Credits*
ANL 215 — Eskimo-Aleut Languages or ANL 216 — Indian Languages of Alaska	3
ANS 120 — Cultural Differences in Institutional Settings	3
Anth. 242 — Native Cultures of Alaska	3
Hist. 110 — History of Alaska Natives	3
P.S. 263 — Alaska Native Politics	3

Core Courses:	*18 Credits*
A. Complete the following required courses (9 credits):	
ANS 310 — The Political Economy of ANCSA	3
ANS 320 — Language and Ethnicity: Applications to Alaska	3
ANS 415 — Comparative Economic Development Processes: Applications for Native Alaska	3

B. Complete 9 credits of the following:

	Credits
ANS 251 — Practicum in Native Cultural Expression	1-3
ANS 301 — Native Cultural Heritage Documentation	3
ANS 375 — Native American Religion and Philosophy	3
ANS 425 — Federal Indian Law and Alaska Natives	3
ANS 430 — Alaska Native Education	3
ANS 475 — Alaska Native Social Change	3
Art 365 — Native Arts of Alaska	3
Engl. 349 — Narrative Art of Alaska Native Peoples (In English Translation)	3
Mus. 223 — Native Alaskan Music	3
Soc. 408 — American Minority Groups	3
3. Minimum Credits Required	130

MINOR in Alaska Native Studies
A minor requires a minimum of 15 credits in Alaska Native studies. All minor programs must be approved by the head, Alaska Native studies.

Anthropology

College of Liberal Arts
Department of Anthropology

Degrees: B.A., B.S., M.A., Ph.D.
Minimum Requirements for Degrees: B.A. — 130 credits; B.S. — 130 credits; M.A. — 30 additional credits; Ph.D — Open

The anthropology program offers a balanced and flexible program of academic courses and research opportunities in cultural anthropology, archeology, and physical anthropology, particularly with respect to the past and present cultures of the North. Anthropology contributes to an understanding of the complex problems of human behavior, cultural and social organization, and the relationship of humans 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 in the Arctic and subarctic.

Requirements

Anthropology — B.S. or B.A. Degree
1. Complete general university requirements and B.A. or B.S. degree requirements.
2. Complete the following program (major) requirements:

	Credits
Anth. 200 — Social/Cultural Anthropology	3
Anth. 211 — Fundamentals of Archeology	3
Anth. 222 — Human Evolution	3
Anth. 210 or 212 or 323 — New World or Old World Prehistory or Archaeology of China	3
Anth. 315 or 321 — Human Biology or Physical Anthropology of the Americas	3
Anth 329 or 380 or 381 or 382 or 383 — Peoples of the Russian North or People of the Alaskan SW or the Inupiaq and Yup'ik Peoples or Peoples of the Alaskan SE or Athabaskan Peoples	3 or 4
Anth. 410 — History of Social/Cultural Anthropology	3
Approved* open program electives at 200 level or above	12

*For example, Anth. 413 and 461 are recommended for those interested in archaeology, as is fieldwork experience.

Courses outside departmental offerings:	
Ling. 101 — Nature of Language	3
An approved Statistics course	3
3. Minimum credits required	130

MINOR in Anthropology: 18 credits inc. Anth 101 (see black book)
A minor in anthropology requires 18 hours in anthropology, including 15 from the core and 400-level courses, and 3 from Anth. 101 or 102.

Anthropology — M.A. Degree
The graduate program emphasizes a basic and general preparation in the field of anthropology. Such preparation enables graduates of the program to (1) pursue more advanced training leading to the Ph.D. in anthropology, or (2) prepares them to teach anthropology within secondary education and/or undergraduate levels of higher education, or (3) prepares students for career positions with various levels of government in which some anthropological background and/or expertise is beneficial. While the basic program is oriented toward general competence, subfield specialization is possible through individual programs.

Anthropology — Ph.D.
The Ph.D. is available with an emphasis in several areas of anthropology: Alaskan archaeology; Quaternary studies; and contemporary Alaska Native studies.

For complete information on the graduate programs in anthropology, see the UAF Graduate Catalog.

Applied Accounting

School of Career and Continuing Education
Business Systems and Technology Department

Degree: A.A.S.
Minimum Requirements for Degree: 60 credits

The applied accounting program prepares students for entry-level accounting positions in payables and/or receivables, bookkeeping and payroll accounting. This program covers financial decision-making tools for the small business operator as well. The courses in this program address the concerns of modern business people and provide the training necessary to enhance success in business. Many classes are scheduled in the evening in order to accommodate working students. Microcomputer and office technology labs are available for "hands on" training.

Requirements

Applied Accounting — A.A.S. Degree
1. Complete the following general degree requirements:

Written Communication (Engl. 111 plus any 200-level written communications course or applied written communications course as approved by the head of the program in which the degree is earned.)	6

Oral Communication 3
Select a total of 6 credits from the following areas: humanities, social science, mathematics or natural science 6
(At least 3 credits shall be math or natural science at the 100 level or above.)
Subtotal 15
2. Complete the following major degree requirements:
ACCT 101 — Elementary Accounting I 3
ACCT 102 — Elementary Accounting II 3
ABUS 141 — Payroll Accounting 2
ABUS 211 — Tax for Business Entities 2
ABUS 216 — Analyzing Financial Statements 3
ABUS 221 — Microcomputer Accounting 3
ABUS 230 — Applied Intermediate Accounting 3
ABUS 243 — Applied Cost Accounting 3
BA 151 — Introduction to Business 3
ABUS 179 — Fundamentals of Supervision 3
ABUS 240 — Business Law 3
ABUS 155 — Business Math 2
CAPS 150 — Computer Business Applications 3
Economics Elective 3
OP 203 — Calculating Machines 2
Subtotal 41
3. Complete a total of 4 general electives credits 4
Degree Total 60
A calculating machines proficiency exam must be passed to complete degree requirements.

Applied Business

School of Career and Continuing Education
Business Systems and Technology Department

Degree: A.A.S.
Minimum Requirements for Degree: 60 credits

Planning and preparation are the keys to success in business. Running a business effectively requires a basic understanding of the principles of accounting, management, economics, business law and finance. The two-year associate of applied science degree in applied business provides students with the skills and training needed to succeed in business. Instructors strive to equip students with practical understanding of the marketplace and not just a "textbook" view of business.

Requirements

Applied Business — A.A.S. Degree
1. Complete the following general degree requirements:
Written Communication 6
(Engl. 111 plus any 200-level written communications course or applied written communications course as approved by the head of the program in which the degree is earned.)
Oral Communication 3
Select a total of 6 credits from the following areas: humanities, social science, mathematics or natural science 6
(At least 3 credits shall be math or natural science at the 100 level or above.)
Subtotal 15
2. Complete the following major degree requirements:
ACCT 101 — Elementary Accounting 3
ACCT 102 — Elementary Accounting 3
BA 151 — Introduction to Business 3
ABUS 154 — Human Relations 3
ABUS 241 — Business Law 3
CAPS 150 — Computer Business Applications 3
Economics Elective 3
ABUS 156 — Business Math 2
OP 231 — Business Communications 3
Subtotal 26
3. Complete the following major specialty electives:
Select 15 credits from the following:
ABUS 221 — Microcomputer Accounting 3
ABUS 179 — Fundamentals of Supervision 3
ABUS 231 — Introduction to Personnel 3
ABUS 253 — Principles of Retailing 3
ABUS 254 — Salesmanship 3
ABUS 273 — Managing a Small Business 3
ABUS 130 — Real Estate 3
ABUS 160 — Principles of Banking 3
ABUS 261 — Analyzing Financial Statements 3
ABUS 224 — Money and Banking 3
or any other ABUS, B.A. or Acct. courses.
Subtotal 15
4. Complete a total of 4 general electives credits 4
Degree Total 60
A calculating machines proficiency exam must be passed to complete degree requirements.

Applied General Business

Rural College
Northwest Campus

Degree: A.A.S.
Minimum Requirements for Degree: 60 credits

Requirements

Applied General Business — A.A.S. Degree
1. Complete the following general degree requirements:
Written Communication 6
(Engl. 111 plus any 200-level written communications course or applied written communications course as approved by the head of the program in which the degree is earned.)
Oral Communication 3
Select a total of 6 credits from the following areas: humanities, social science, mathematics or natural science 6
(At least 3 credits shall be math or natural science at the 100 level or above.)

2. Complete the following Applied Studies courses:
Acct. 101 and 102 — Elementary Accounting 6
B.A. 151 — Introduction to Business 3
B.A. 100 — Introduction to Data Processing and BASIC 3
ABUS 250 — Introduction to Managerial Accounting 3
Econ. 201 — Principles of Economics-Micro 3
ABUS 241 — Business Law I 3
ABUS 179 — Fundamentals of Supervision 3
ABUS 232 — Fundamentals of Management 3
ABUS 233 — Financial Management 3
3. Electives 15
Degree Total 60

Applied Mining Technology

School of Career and Continuing Education
Trade and Industry Department

Certificate
Minimum Requirements for Certificate: 30 credits

The primary objective of the program is to prepare students for employment in the mining technology industry. Possible career paths for certificate graduates include entry level positions with exploration, mining, environmental and consulting companies. A secondary objective is to provide career development and personal enrichment for experienced miners and workers within the mineral industry.

UAF is unique in offering a one-year mining technology job training program. Certificate graduates will be trained to meet the anticipated demand for workers trained in open pit mining, surface coal mining, underground metal mining, sand and gravel, and placer mining.

Requirements

Applied Mining Technology — Certificate
1. Complete the following major specialty courses:
MIN 101 — Minerals, Man and the Environment 3
AMIT 101 — General Mining Technology or
GEOS 101 — The Dynamic Earth 4
AMIT 109 — Underground Mine Safety 2
AMIT 110 — New Underground Miner Training 2
AMIT 120 — Explosives I 2
AMIT 125 — Mineral Exploration Techniques 3
AMIT 129 — Surface Mining Safety 1
AMIT 130 — Surface Mining Operations 3
AMIT 140 — Environmental Permitting 1
AMIT 170 — Fundamentals of Coal Mining 3
Subtotal 24
2. Select 4 credits from the following major specialty electives
AMIT 151 — Settling Pond Technology 1
AMIT 152 — Techniques of Fire Assay 1
AMIT 153 — Laboratory Analysis 1
AMIT 154 — Water Quality and Flocculents 1

AMIT 155 — Drilling Technology	1
AMIT 156 — Applied Cartography	1
AMIT 161 — Alaskan Ore Deposits	1
AMIT 162 — Geochemical Sampling	1
AMIT 180 — Colored Stone Evaluation I	3
AMIT 185 — Diamond Grading and Evaluation	3
AMIT 193 — Special Topics	1-3
AMIT 205 — Geomagnetic Surveying	1
AMIT 206 — Electromagnetic Surveying	1
AMIT 210 — Advanced Underground Mining	2
AMIT 220 — Explosives II	1
AMIT 230 — Field Methods	2
AMIT 231 — Heap Leaching	1
AMIT 280 — Colored Stone Evaluation II	3
AMIT 282 — Cooperative Work Experience	2
AVTY 231 — Arctic Survival	3
H.S. 120 — Industrial First Aid and CPR	1
Subtotal	4

3. Any approved Applied Business, Computer Application, Drafting Technology, 100 level or above university science course, Mechanics, Welding, or School of Mineral Engineering course. *NOTE: Only a maximum of 3 approved elective credits can be taken which must be approved in advance (in writing) by the adviser of the Mining Technology Program.* 3

Certificate total 30

Applied Physics

College of Natural Sciences
Department of Physics

Degree: B.S.
Minimum Requirements for Degree: 130 credits

Requirements

Applied Physics — B.S. Degree
1. Complete the general university requirements and B.S. degree requirements.
2. Complete the following program (major) requirements:
Complete Math. 200-201-202, 302 and 9 additional credits in mathematics at the 200-level or above.
*Complete Phys. 213, 311, and 331 and 12 additional credits in physics at the 300-level or above.
Complete 20 approved credits** in a chosen subject area of applied physics.

3. Minimum credits required 130

*Implicit in this requirement are 8 credits of lower-division physics courses which are prerequisites for these courses.
**These credits must be approved before the beginning of the student's final semester by the head of the Physics Department.

Arctic Engineering

School of Engineering
Department of Civil Engineering

Degree: M.S.
Minimum Requirements for Degree: 30 credits (beyond Bachelors Degree in Engineering)

The arctic engineering program is designed to provide training for graduate engineers who must deal with the unique challenge of design, construction, and operations in cold regions of the world. The special problems created by the climatic, geological, and logistical conditions of the Arctic and subarctic require knowledge and techniques not usually covered in the normal engineering courses.

The current development of petroleum and other natural resources has accentuated the demand for engineers trained in northern operations, both from the private industries that are involved in the development and from government agencies that must plan for or regulate this activity.

For complete information on the graduate program in arctic engineering, see the UAF Graduate Catalog.

Art

College of Liberal Arts
Department of Art

Degrees: B.A., B.F.A.
Minimum Requirements for Degrees: 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 bachelor of fine arts is a professionally oriented degree designed to prepare students for careers in art. This degree is also the usual prerequisite for graduate studies in art. Enrollment in the B.F.A. program is recommended only for those students willing to make the considerable commitment of time and energy necessary to strive for professional competence in their major areas.

Requirements

Art — B.A. Degree
1. Complete general university requirements and B.A. degree requirements.
2. Complete the following program (major) requirements:

A. Lower Division (27 credits)	Credits
Art 105 — Beginning Drawing	3
Art 205 — Intermediate Drawing	3
Art 161, 162 or 163 — Design and Color Theory (2 out of 3 courses)	6
Art 261-262 — History of World Art	6
Art 211 — Beginning Sculpture	3
Art 213 — Beginning Oil Painting	3
One elective chosen from:	3
Art 201 — Beginning Ceramics	
Art 207 — Beginning Printmaking	
Art 209 — Beginning Metalsmithing	

B. Upper Division (12 credits)
Nine (9) credits in upper-division courses in one subject area, selected from one of these major concentrations: 9

Drawing	Sculpture
Painting	Ceramics
Printmaking	Metalsmithing

Upper-division Art History or Humanities 332 or Art 365	3
Minimum Required Credits for major	39
3. Minimum Credits Required	130

Transfer students who are candidates for the B.A. degree or a B.F.A. in Art must complete a minimum of 18 hours of credits in art courses while in residence.

Art — B.F.A. Degree
1. Complete general university requirements and B.A. degree requirements; a non-art minor is not required for this degree.
2. Complete the following program (major) requirements:

A. Lower Division (27 Credits)	Credits
Art 105 — Beginning Drawing	3
Art 205 — Intermediate Drawing	3
Art 161, 162 — 2-D Design, Color and Design or Art 163 — 3-D Design (two of the three)	6
Art 261, 262 — History of World Art	6
Art 211 — Beginning Sculpture	3
Art 213 — Beginning Painting	3
One of the following	3
Art 201 — Beginning Ceramics	
or Art 207 — Beginning Printmaking	
or Art 209 — Beginning Metalsmithing	

B. Upper Division (45 Credits)	
*Upper Division Art History	6
Two areas of specialization in Art:	
Major specialization	21
Minor specialization	9
Art Electives	6
Thesis Project	3
3. Minimum Credits Required	130

Majors available for the B.F.A. are painting, drawing, printmaking, sculpture, ceramics, and metalsmithing.

*Humanities 332 or Art 365 may apply toward this requirement.

MINOR in Art:
A minor in Art by non-art majors requires 12 credits 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.

Asian Studies

Interdisciplinary

Minor only
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

MINOR in Asian Studies
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. 323, Hist. 121-122, 330, 331, Geog. 311; Jpn. 101-102, 201-202; Phil. 202.

Associate of Arts

Rural College
Chukchi, Kuskokwim and Northwest Campuses and
School of Career and Continuing Education
Academic Programs

Degree: A.A.
Minimum Requirements for Degree: 60 credits

The associate of arts degree offers a rigorous program of study for the serious student who eventually intends to transfer to a baccalaureate program.

Requirements

Associate of Arts Degree
1. Complete a minimum of 60 semester credits at the 100 level or above including at least 20 at the 200 level or above.
2. Complete a minimum of 45 semester credits in the 5 areas below with no less than 9 credits in each:

Written Communication	6
Oral Communication	3
Math/Natural Science	9
Humanities	9
Social Science	9
Applied Studies	9
Subtotal	45
3. Electives	15
Total	60

Course Classifications
Subjects and courses that may be used to satisfy general requirements are classified as follows:

Humanities:
Alaska Native Language, American Sign Language, Art, Foreign Language, History*, Humanities, Journalism, Languages, Linguistics, Literature, Philosophy, Music, Religion (selected courses), Speech and Public Communications and Theater.
Mathematics and Logic:
Logic, Mathematics and Statistics. *Natural Sciences:*
Biological Sciences, Biology, Chemistry, Geology, Physical Anthropology, Physical Geology, Physical Sciences and Physics.
Applied Studies:
Agriculture, Airframe and Powerplant, Alaska Studies, Applied Accounting, Applied Business, Aviation Technology, Computer Applications, Construction Technology, Culinary Arts, Diesel/Heavy Equipment, Drafting Technology, Early Childhood Development, Education, Electronics, Emergency Medical Training, Fire Science, Fisheries/Wildlife Management, Home Economics, Justice, Library Science, Management, Mechanics, Military Science, Mining Technology, Nursing/Health Science, Nutrition, Office Professions, Paraprofessional Counseling, Personal Development, Petroleum, Physical Education/Recreation, Public Safety (including corrections, fire science, justice, law and police administration), Trade and Technology, Waste Water Technology and Welding.
Social Sciences:
Anthropology, Behavioral Science, Business Law, Counseling, Economics, Geography, History*, Political Science, Psychology and Sociology.

**History applies to the social science classification only for bachelor's degrees.*

Athletic Coaching

College of Liberal Arts
Department of Physical Education

Minor only
A minor in athletic coaching (18 credits) is available for those students more interested in the coaching of athletic teams, in schools or communities, than in the more general discipline of physical education.

Requirements

MINOR in Athletic Coaching
1. Complete the following required courses: *Credits*

P.E. 411 — History and Philosophy of Sport and Physical Activity	3
P.E. 412 — Principles and Problems in Athletic Coaching	3
P.E. 421 — Physiology of Exercise	3
P.E. 432 — Biomechanics of Human Performance	3
P.E. 440 — Prevention and Care of Athletic Injuries	3

2. Complete the remaining credits in approved courses which will develop competency in the area selected for coaching 3
(Note: This minor is not available with a physical education major.)

Atmospheric Sciences

College of Natural Sciences
Department of Physics

Degrees: M.S., Ph.D.
Minimum Requirements for Degrees: M.S., 30 additional credits; Ph.D., — no fixed credits

For complete information on the graduate programs in atmospheric sciences, see the UAF Graduate Catalog.

(See also "Space Physics".)

Aviation Technology

School of Career and Continuing Education
Trade and Industry Department

Degree: A.A.S.
Minimum Requirements for Degree: 60 credits

The aviation technology curriculum leads to an associate of applied science degree for individuals aspiring to a career as a professional pilot. Courses are also offered for currently rated flight crew members who desire to refresh or upgrade their aeronautical knowledge in order to maintain and enhance their own qualifications. Ground schools and related courses are taken in residence, while flight training is arranged through local flying schools. Rated pilots or military aviators may be eligible for credit based upon experience, through the Credit for Prior Learning program.

Requirements

Aviation Technology — A.A.S. Degree
1. Complete the folowing general degree requirements:
Written Communication 6
(Engl. 111 plus any 200-level written communications course or applied written communications course as approved by the head of the program in which the degree is earned.)

Oral Communication 3
Select a total of 6 credits from the following areas: humanities, social science, mathematics or natural science 6
(At least 3 credits shall be math or natural science at the 100 level or above.)
Subtotal 15
2. Complete the following major degree requirements:
AVTY 100 — Private Pilot Ground School 4
AVTY 101 — Private Pilot Flight Training 2
AVTY 102 — Commercial Ground Instruction 3
AVTY 103 — Commercial Flying 2
AVTY 155 — Preventive Maintenance for Pilots 3
AVTY 200 — Instrument Ground School 4
AVTY 201 — Instrument Flight Training 2
AVTY 231 — Arctic Survival 3
AVTY 235 — Elements of Weather 3
Subtotal 26
3. Complete the following major specialty electives:
Select 15 credits from the following:
AVTY 105 — Seaplane Flight Training 1
AVTY 107 — Multi-Engine Flight Training 1
AVTY 108 — Introduction to Skis 1
AVTY 109 — Glider Flight Training 3
AVTY 110 — Biennial Flight Review 1
AVTY 202 — Flight Instructor Ground School 3
AVTY 203 — Flight Instructor Flight Training 2
AVTY 205 — Instrument Flight Instructor 3
AVTY 206 — Transport Pilot Ground School 4
AVTY 207 — Transport Pilot Flight Instruction 2
AVTY 208 — Flight Simulator Operations 3
AVTY 226 — Flight Engineer Ground School 4
AVTY 232 — Aviation Astronomy and Navigation 3
AVTY 239 — Aircraft Dispatcher 4
FSCI 117 — Rescue Practices 3
Subtotal 15
4. General Electives 4
Degree Total 60

Biological Sciences

College of Natural Sciences
Department of Biology and Wildlife

Degrees: B.A., B.S.
Minimum Requirements for Degrees: B.A. — 130 credits; B.S. — 130 credits

The curricula in the biological sciences program 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 program. Candidates who expect to teach in public secondary schools must be sure that education requirements are met.

Requirements

Biological Sciences — B.A. Degree
1. Complete the general university requirements and B.A. degree requirements.
2. Complete the following program (major) requirements:

Biology 105-106, 210, 271, 362, and at least 16 additional credits in biology, including at least one course in botany, one in microbiology, and one in zoology.* A majority of these additional credits in biology must be upper division (300-400) courses. A maximum of 5 credits of independent study (97) may be applied to this requirement.
Chemistry — one year
Mathematics — one year
3. Minimum credits required 130

Biological Sciences — B.S. Degree
1. Complete the general university requirements and the B.S. degree requirements in communications and social sciences/humanities.
2. Complete the following program (major) requirements:
Core Requirements: Biol. 105-106, 271, 342, 362, Bot. 239, Math 200 or 272, Stat. 301, Chem 105-106, 321-322, and at least two courses in addition to those listed above, chosen from Statistics, Chemistry (200 level or above), Geosciences, Mathematics (200 level or above), Physics, Oceanography, and/or Space Physics and Atmospheric Sciences. At least 21 credits in biology/botany must be upper division (300-400) level courses. A maximum of 6 credits of independent study (-97) may be applied to this requirement.
Foreign Language — one collegiate year or 6 credits of social sciences and/or humanities beyond the general requirements for the B.S. degree.
a. For Biology Option complete the following requirements in addition to the core requirements: At least one course in physiology (Biol. 210 or Bot. 416) and 17 additional credits, including one course in zoology (Biol. 222, 305, 317, or 406).*
b. For Botany Option complete the following requirements in addition to the core requirements: At least one course in: plant structure/function (Bot. 334 or 416), zoology (Biol. 222, 305, 317, or 406), plant systematics, evolution and diversity (Bot. 331, Bot. 333 or Bot. 476), and plant ecology (Bot. 474). Two additional upper division (300-400) level courses in botany or biology (including but not restricted to Biol. 308, Bot. 331, 333, 475, 476, A.L.R. 313, 380, 411, or 451).*
3. Minimum credits required 130

*Students may petition to substitute with chemistry courses up to 7 credits in the B.A. program, 10 credits in the B.S. (Biology Option) program, or 4 credits in the B.S. (Botany Option) program, approved in advance, for the additional biology credits required for the degree.

MINOR in Biological Sciences
A minor in biological sciences requires 20 credits in biology, including Biol. 105-106, and three of the following courses: Biol. 210, 271, 305, 342, 362, Bot 239.

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 above for a B.A. degree with a major in biological sciences.

Biology

College of Natural Sciences
Department of Biology and Wildlife

Degrees: M.S., M.A.T., Ph.D.
Minimum Requirements for Degrees: M.S. — 30 or more additional credits; Ph.D. — open

For complete information on the graduate programs in biology, see the UAF Graduate Catalog.

Botany

College of Natural Sciences
Department of Biology and Wildlife

Degree: M.S.
Minimum Requirements for Degree: M.S. — 30 additional credits

For complete information on the graduate program in botany, see the UAF Graduate Catalog.

Business Administration

School of Management
Department of Business Administration

Degrees: B.B.A., M.B.A.
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, marketing and travel industry management 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. B.A. 151 is an overview and is recommended as an introductory course for persons with a potential interest in a business major or minor who are either undecided or perhaps unclear about the nature of the various functions performed in the administration of organizations.

All majors must earn a "C" or better in all Common Body of Knowledge courses, department specific general requirements, major specific requirements, and specific math and statistics requirements.

Requirements

Business Administration — B.B.A. Degree

1. Complete general university requirements and B.B.A. degree requirements including 6 credits humanities electives (in addition to 9 credit written and oral communication requirement).

2. Complete the following statistics requirements:

Econ. 226 — Intro. to Statistics for Economics and Business 3
Econ. 227 — Intermediate Statistics for Economics and Business..... 3

3. Complete the following *Common Body of Knowledge* requirements:

	Credits
Acct. 101 and 102 — Elementary Accounting	6
B.A. 101 — Intro. to Management Information Systems	3
B.A. 310 — Management Information Systems	3
B.A. 325 — Financial Management	3
B.A. 331 — The Legal Environment of Business	3
B.A. 343 — Principles of Marketing	3
Econ. 324 or 350 — Inter. Macroeconomics/Money & Banking	3
B.A. 360 — Operations Management	3
B.A. 390 — Organizational Theory and Behavior	3
B.A. 462 — Administrative Policy	3

4. Complete the following *Business Administration* general requirements:

	Credits
B.A. 301 — Processes of Management	3
B.A. 332 — Business Law	3
Acct. 352 — Management Accounting	3
Econ. 321 or 322 — Intermediate Microeconomics/Managerial Economics	3
B.A. 460 — International Business	3

5. Free Electives (Upper Division) 11
(Maximum of 5 credits may be taken in School of Management, or transferred courses in Accounting, B.A., or Economics.)

6. Complete one of the following areas:

Finance

The field of finance is concerned with the raising of funds and their subsequent effective use by the organizations which require them. The student is thus concerned with understanding the condition and workings of the financial system, financial policies of industrial firms and non-profit organizations, the vitality of the securities markets, and the valuation of individual securities and portfolios.

Finance Requirements:	Credits
B.A. 423 — Investment Management	3
B.A. 425 — Adv. Corp. Financial Problems	3
B.A. 430 — Current Topics in Finance	3
B.A. 461 — International Finance	3
Upper-division electives approved in writing by major advisor	9

International Business

The interdisciplinary program in international business is designed to prepare students for careers with multinational firms, internationally oriented financial institutions, and state, national and international agencies dealing with foreign business.

International Business Requirements:	Credits
B.A. 443 — International Marketing	3
B.A. 461 — International Finance	3
Econ. 463 — International Economics	3
Two academic years of one foreign language (German, Japanese, Russian, Spanish, French)	12-18
P.S. 321 or 322 — International Politics	3
P.S. 437 — U.S. Foreign Policy	3
P.S. 481 — The UN, Model UN, and Intern'l Admin. (optional)	0-1

Complete one of the following courses (appropriate to language concentration):
Geog. 305 — Geography of Europe (Except USSR) *or*
Geog. 306 — Geography of the Soviet Union *or*
Geog. 311 — Geography of Asia *or*
Geog. 405 — Political Geography 3
Complete one additional history course appropriate to language concentration 3

(Note: Foreign language credit may also meet humanities general degree requirements. Political science credits will meet social science elective in general degree requirements. Free elective will be adjusted accordingly.)

Management

Management is that administrative force responsible for bringing together the diverse components of an organization in order to achieve effective performance. Administration includes the identification of objectives, the determination of policy, and implementation through strategic decision-making. Results are primarily achieved through the effective use of human resources and in a manner sensitive to the political, social, technological, and economic forces which constitute the environment.

Management Requirements:	Credits
B.A. 307 — Personnel Management	3
B.A. 327 — Collective Bargaining and Labor Relations	3
B.A. 456 — Small Bus. Management	3
Upper-division electives approved in writing by major advisor	12

Marketing

Marketing encompasses all those business activities necessary for the transfer of ownership including the logistics of physical distribution. The marketing student thus needs to study the technical activities of product and market research, advertising and promotion, transportation, the structure of markets and the cultural dimensions of consumer behavior.

Marketing Requirements:	Credits
B.A. 326 — Principles of Advertising	3
B.A. 436 — Consumer Behavior	3
B.A. 441 — Promotion Management	3
B.A. 443 — International Marketing	3
B.A. 445 — Marketing Research	3
B.A. 483 — Marketing Management	3
Upper-division electives approved in writing by major advisor	3

Management Information Systems (MIS): 89-90

MIS is the study of information flows within organizations and of tools and techniques for rationalizing, improving, and automating those information flows. MIS students study how individuals and organizations use information, the analysis and design techniques used to determine and integrate information needs, and the computer—based technology required to automate information processing.

Management Information Systems Requirements:	Credits
B.A. 201 — COBOL (optional but recommended)	3
B.A. 220 — Basic Programming Languages (optional)	3
Acct 316 — Accounting Information Systems	3
B.A. 410 — Systems Analysis and Program Design	3
B.A. 412 — MIS Project	3
B.A. 414 — Database Design for Management Information	3
Upper Division electives approved in writing	9

Travel Industry Management:

The many diverse elements of the travel/tourism industry constitute a service industry encompassing the housing, feeding, entertainment, and transportation of a growing number of visitors each year. The Travel Industry Management Program combines under one management education system the several historically separate disciplines of hotel-motel management, destination research and development, transportation, tourism management, and hospitality marketing.

Travel Industry Management Requirements:	Credits
B.A. 160 — Tourism Principles & Practices	3
B.A. 253 — Internship in Business	3
B.A. 372 — Hotel Administration	3
B.A. 375 — Marketing of Hospitality Service	3
B.A. 377 — Food and Beverage Mgt.	3
B.A. 378 — Passenger Transportation Mgt.	3
B.A. 465 — Tourism Destination Plan and Development	3
B.A. 471 — Tourism Seminar	3

6. Minimum credits required 130

MINOR in Business Administration*:

Acct. 101 — Elementary Accounting	3
B.A. 101 — Introduction to Management Information Systems	3
B.A. 325 — Financial Management	3
B.A. 343 — Principles of Marketing	3
B.A. 307 — Personnel Management *or*	
B.A. 327 — Collective Bargaining and Labor Relations	3
B.A. 301 — Processes of Management	3
Total	18

MINOR in Travel Industry Management*:

B.A. 151 — Introduction to Business	3
B.A. 160 — Tourism Principles and Practices	3
B.A. 378 — Passenger Transportation Management	3
B.A. 465 — Tourism Destination Planning and Development	3

B.A. 471 — Tourism Seminar 3
B.A. 372 — Hotel Administration or B.A. 377 — Food and Beverage Management 3
— Total 18

*For a Bachelor of Arts or Bachelor of Science Degree.

Business Administration — M.B.A. Degree

For complete information on the graduate program in business administration, see the UAF Graduate Catalog.

Chemistry

College of Natural Sciences
Department of Chemistry

Degrees: B.A., B.S., M.A., M.A.T., M.S.
Minimum Requirements for Degrees: B.A., B.S. — 130 credits; M.A., M.S. — 30 additional credits; M.A.T. — 36 additional 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 premedicine; or as laboratory technicians. The rapid introduction of chemical techniques in all branches of commerce and the creation of the many synthetic products has caused substantial growth in the profession. In addition to the traditional employment opportunities in chemistry, well-qualified graduates find positions in the fields of environmental science, oceanography, and related interdisciplinary fields.

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, and advanced courses in biology, chemistry, mathematics, and physics according to the interest of the individual student.

Faculty from many departments and research institutes in the university participate in the department's Program in Biochemistry and Molecular Biology. This program, which emphasizes an understanding of the molecular principles involved in life processes, provides academic and research experience for both undergraduate and graduate students who are interested in careers in the growing area of biotechnology. This program may be especially attractive to students interested in premedicine.

The department offers the student well-equipped laboratories housing instrumentation for nuclear magnetic resonance spectrometry, infrared, ultraviolet/visible, laser Raman, and atomic absorption spectrophotometry, mass spectrometry, gas chromatography, and carbon-hydrogen-nitrogen analysis. Additional equipment such as gas chromatograph/mass spectrometer, x-ray diffractometer, electron microscope, and liquid scintillating counters are available in cooperation with other departments and institutes at UAF.

The chemistry department's four-year B.S. curriculum is accredited by the American Chemical Society.

Requirements

Chemistry — B.A. Degree
1. Complete the general university requirements and B.A. degree requirements.
2. Complete the following program (major) requirements:

	Credits
Chem. 105-106 — General Chemistry	8
Chem. 202 — Basic Inorganic	3
Chem. 212 — Chemical Equilibrium & Analysis	3
Chem. 213 — Quantitative Analysis Laboratory	1
Chem. 321-322 — Organic Chemistry	6
Chem. 324 — Organic Laboratory	3
Chem. 331-332 — Physical Chemistry	6
Chem. 433 — Analytical Instrumental Lab	3
Chem. 434 — Physical Instrumental Lab	3
Chem. 492 — Seminar (seniors)	2
CS 201 — Computer Programming or ES 201 — Computer Techniques	3
Math. 200-201-202 — Calculus	12
Phys. 103-104 or 211-212 — General Physics	8
3. Total Credits Required	130

Chemistry — B.S. Degree
1. Complete the general university requirements and B.S. degree requirements.
2. Complete the following program (major) requirements:
Complete the courses required for a B.A. degree with a major in Chemistry as listed above. Complete the following additional Chemistry courses:

*Chem. 402 — Inorganic Chemistry	3
*Chem. 412 — Instrumental Analytical Methods	3
*Chem. 498 — Research	4
*One additional 400 or 600 level chemistry course	3
3. Total Credits Required	130

Suggested Curriculum for a B.S. Degree in Chemistry:

First Year	
Fall Semester	*15 credits*
Chem. 105 — General Chemistry I	4
Math. 200 — Calculus	4
Engl. 111 — Methods of Written Communication	3
Elective	4
Spring Semester	*17 credits*
Chem. 106 — General Chemistry II	4
E.S. or C.S. 201 — Comp. Tech./Comp. Programming	3
Math. 201 — Calculus II	4
Speech Communications Elective	3
Social Science/Humanities Elective	3
Second Year	
Fall Semester	*15 credits*
Chem. 212 — Chemical Equilibrium and Analysis	3
Chem. 213 — Quantitative Analysis Laboratory	1
Math. 202 — Calculus III	4
Phys. 103 or 211 — General Physics	4
Engl. 213 — Intermediate Exposition	3
Spring Semester	*17 credits*
Chem. 202 — Basic Inorganic Chemistry	3
Chem. 321 — Organic Chemistry	3
Phys. 104 or 212 — General Physics	4
Social Science/Humanities Elective	3
Elective	4
Third Year	
Fall Semester	*16 credits*
Chem. 322 — Organic Chemistry	3
Chem. 324 — Organic Laboratory	3
Chem. 331 — Physical Chemistry	3
Humanities/Social Science Elective	3
Electives	4
Spring Semester	*17 credits*
Chem. 332 — Physical Chemistry	3
*Chem. 412 — Instrument Analysis Methods	3
Chem. 433 — Analytical Instrumental Lab	3
Humanities/Social Science Elective	3
Electives	5
Fourth Year	
Fall Semester	*17 credits*
*Chem. 402 — Inorganic Chemistry	3
Chem. 434 — Physical Instrumental Laboratory	3
Chem. 492 — Seminar	1
*Chem. 498 — Research	2
Social Science/Humanities Elective	3
Electives	5
Spring Semester	*16 credits*
*Other Advanced Chemistry	3
Chem. 492 — Seminar	1
*Chem. 498 — Research	2
Electives	10

Upon completing the recommended curriculum and fulfilling all general university requirements, the student will receive a baccalaureate degree certified by the American Chemical Society.

The electives must include at least 6 credits at the upper division level (to satisfy the UAF general degree requirements for 42 upper division credits).

Chemistry foundation courses may be used toward partial fulfillment of the natural science requirement for the B.S. degree with a major in Chemistry.

*Advanced courses in the physical or biological sciences or mathematics may be substituted with permission of the head of the Chemistry Department. However, the student will not receive an ACS-certified degree.

Chemistry — B.S. Degree with Biochemistry/Molecular Biology Option
1. Complete the general university requirements and B.S. degree requirements.

2. Complete the following program (major) requirements:

	Credits
Biol. 105-106 — Fundamentals of Biology	8
Biol. 342 — Microbiology	4
Biol. 361 — Cell Biology	4
Biol. 362 — Principles of Genetics	4
Chem. 105-106 — General Chemistry	8
Chem. 212 — Chemical Equilibrium & Analysis	3
Chem. 213 — Quantitative Analysis Laboratory	1
Chem. 321-322 — Organic Chemistry	6
Chem. 324 — Organic Laboratory	3
Chem. 331-332 — Physical Chemistry	6
Chem. 433 — Analytical Instrumental Laboratory or Chem. 434 — Physical Instrumental Laboratory	3
Chem. 451 — General Biochemistry	3
Chem. 452 — Biochemistry Laboratory	3
Chem. 492 — Seminar	2
Math. 200-201-202 — Calculus	12
Phys. 103-104 or 211-212 — General Physics	8
Major elective (approved by department head)	6
3. Total Credits Required	130

Suggested Curriculum for a B.S. Degree in Chemistry: with Biochemistry/Molecular Biology Option

First Year

Fall Semester	*15 credits*
Chem. 105 — General Chemistry I	4
Biol. 105 — Fundamentals of Biology I	4
Math. 200 — Calculus I	4
Engl. 111 — Methods of Written Comm.	3
Spring Semester	*18 credits*
Chem. 106 — General Chemistry II	4
Biol. 106 — Fundamentals of Biology II	4
Math. 201 — Calculus II	4
Speech Communications Elective	3
Elective	3

Second Year

Fall Semester	*15 credits*
Chem. 212 — Chemical Equilibrium and Analysis	3
Chem. 213 — Quantitative Analysis Laboratory	1
Chem. 321 — Organic Chemistry	3
Math. 202 — Calculus III	4
Phys. 103 or 211 — General Physics	4
Spring Semester	*17 credits*
Chem. 322 — Organic Chemistry	3
Biol. 342 — Microbiology	4
Phys. 104 or 212 — General Physics	4
Engl. 211 or 213 — Intermediate Exposition	3
Hum./Soc. Sci. Elective	3

Third Year

Fall Semester	*17 credits*
Chem. 324 — Organic Laboratory	3
Chem. 331 — Physical Chemistry	3
Chem. 451 — Biochemistry	3
Biol. 362 — Principles of Genetics	4
Hum./Soc. Sci. Elective	4
Spring Semester	*16 credits*
Chem. 332 — Physical Chemistry	3
Biol. 361 — Cell Biology	4
***Electives	6
Hum./Soc. Sci. Elective	3

Fourth Year

Fall Semester	*16 credits*
Chem. 433 — Analytical Instrumental Laboratory or Chem. 434 — Physical Instrumental Laboratory	3
Chem. 492 — Seminar	1
Hum./Soc. Sci. Elective	3
***Electives	9
Spring Semester	*17 credits*
Chem. 452 — Biochemistry Laboratory	3
Chem. 492 — Seminar	1
Major Electives	6
Hum./Soc. Sci. Elective	3
***Elective	3

***9 of these credits must be 300 level or above.

MINOR in Chemistry

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

Chemistry — M.A.T. or M.S. Degree

For complete information on the graduate programs in chemistry, see the UAF Graduate Catalog.

Citizens' Law

College of Liberal Arts
Department of Political Science

Minor Only

The program in Citizens' Law will give students not planning to go to law school the opportunity to become familiar with legal ideals, legal institutions and the legal process. The student is provided with tools for reasoned appraisal of how the law works and of the policies that underlie it. The minor concentration is based firmly on the view that the study of law has a rich humanistic tradition and that its pursuit can encourage sustained reflection of fundamental values.

Requirements

MINOR in Citizens' Law
(Not available with Justice major.)

Foundation Courses:	Credits
Just. 110 — Introduction to Justice	3
P.S. 101 — Introduction to American Government and Politics	3
Core Courses:	
Just./P.S. 250 — History of the Law	3
Just./P.S. 303 — Introduction to Legal Processes	3
Just./P.S. 330 — Law and Society	3
Just./P.S. 404 — Legal Research and Writing	3

Elective Courses: (6 credits)

Choose 6 credits from the following courses. Must include two different programs or disciplines.

ANS 425 — Federal Indian Law and Alaskan Natives	3
B.A. 331 — The Legal Environment of Business	3
B.A. 332 — Business Law	3
J.B. 413 — Mass Media Law and Regulation	3
Just. 352 — Criminal Law	3
Just. 354 — Procedural Law	3
P.S. 302 — Congress and Public Policy	3
P.S. 322 — International Law and Organization	3
P.S. 435 — Supreme Court and American Legal System	3
P.S. 436 — Courts and Civil Liberties	3

Civil Engineering

School of Engineering
Department of Civil Engineering

Degrees: B.S., M.C.E., M.S.
Minimum Requirements for Degrees: B.S. — 133 credits; M.C.E. or M.S. — 30 additional credits

Civil engineers plan, design and supervise the construction of facilities essential to modern life in both the public and private sectors—facilities that vary widely in nature, size and scope: space launching facilities, offshore structures, bridges, buildings, tunnels, highways, transit systems, dams, airports, irrigation projects, treatment and distribution facilities for water and collection and treatment facilities for wastewater.

Civil engineers are leading users of today's sophisticated high technology and are in the forefront of high technology's newest applications. They employ the latest concepts in computer-aided engineering (CAE/CAD) during design, construction, project scheduling and cost control.

Civil engineers are problem solvers involved in community development and improvement and as sure are meeting the challenges of polluting, the deteriorating infrastructure, traffic congestion, energy needs, floods, earthquakes, urban redevelopment and community planning.

The opportunity for creativity is unlimited given the wide scope of projects covered by civil engineering.

The civil engineering program at UAF began in 1922, had its first graduate in 1931 and since has graduated 500 men and women. Many of these graduates work in Alaska's cities, towns and villages in a wide

range of responsible positions. More than 60 percent of Alaska's professional engineers practice in civil engineering. Civil engineers continue to provide a significant contribution to society. The UAF civil engineering program has been accredited since 1940 and presently by the national Accreditation Board for Engineering and Technology (ABET). All engineering programs in the department give special attention to problems of northern regions.

Requirements

Civil Engineering — B.S. Degree
1. Complete general university requirements.
2. Complete the following degree and program (major) requirements:

First Year

Fall Semester	*16 credits*
Engl. 111 — Methods of Comm	3
Math 200 — Calculus	4
E.S. 101 — Descriptive Geometry for Engineers	2
Chem. 105 — General Chemistry	4
Social Science/Humanities Elective	3

Spring Semester	*17 credits*
Speech Communication Elective	3
Math 201 — Calculus	4
C.E. 112 — Elementary Surveying	3
Chem. 106 — General Chemistry	4
E.S. 201 — Computer Techniques	3

Second Year

Fall Semester	*17 Credits*
Math. 202 — Calculus	4
Phys. 211 — General Physics	4
Engl. 211 — Intermediate Exposition with Modes of Literature or Engl. 213 — Intermediate Exposition	3
E.S. 209 — Statics	3
Social Science/Humanities Elective	3

Spring Semester	*16 credits*
Math 302 — Differential Equations	3
Phys. 212 — General Physics	4
E.S. 210 — Dynamics	3
Geos. 261 — General Geology for Engineers	3
Social Science/Humanities Elective	3

Third Year

Fall Semester	*16 credits*
C.E. 334 — Properties of Materials	3
E.S. 301 — Engineering Analysis	3
E.S. 331 — Mechanics of Materials	3
E.S. 341 — Fluid Mechanics	4
C.E. 402 — Intro. to Transportation Engineering	3

Spring Semester	*17 credits*
E.S. 346 — Basic Thermodynamics	3
C.E. 344 — Water Resources Engineering	3
C.E. 326 — Intro. to Geotech. Engineering	4
C.E. 441 — Environ. Engineering	4
C.E. 431 — Structural Engineering I	3

Fourth Year

Fall Semester	*17 credits*
C.E. 432 — Structural Engineering II	3
E.S. 307 — Elem. of Electrical Engineering	3
Technical Elective*	3
Technical Elective*	3
Technical Elective*	3
Social Sciences/Humanities Elective	3

Spring Semester	*16 credits*
E.S.M. 450 — Economic Analysis and Operations	3
C.E. 438 — Design of Engr. Systems	3
Social Sciences/Humanities Elective	4
Technical Elective*	3
Technical Elective*	3
C.E. 400 — EIT Exam	0

*Technical electives must include 12 credits of CE courses and 3 credits of technical courses and be approved in writing by the advisor.

Of the 16 social science/humanities credits, at least 6 must be above the 100 level or advanced courses in a 100-level sequence. Sufficient depth in at least one of the areas must be demonstrated by evidence of a sequence of courses. This sequence must be approved by the students' departmental advisor.

For credit toward a degree in civil engineering, the social science and humanities electives must be approved by the student's faculty advisor.

The ability to utilize computers for normal class work is expected in all engineering classes above the 100 level.

Civil Engineering — M.S. or M.C.E. Degree

For complete information on the graduate programs in civil engineering, see the UAF Graduate Catalog.

Community Health Aide

Rural College
Kuskokwim Campus; Northwest Campus

Certificate in Community Health Practice; **Degree:** A.A.S
Minimum Requirements for Degree — 60 credits; for Certificate — 24 credits

The Community Health Aide Program is designed to prepare local residents to provide emergency medical and basic preventive, curative and rehabilitative health care services in their communities. Upon completion of the Community Health Aide certificate program, the Community Health Aide will be titled Community Health Practitioner.

Admission to the Community Health Aide Certificate Program requires that the student be employed by a regional health corporation prior to entry into the program. A high school diploma and/or previous training or work experience in the health field is recommended, but not required. Community Health Aides* are selected by the communities in which they are to serve with concurrence of the regional health corporation. It is suggested that the individual chosen be:

1. A local resident who intends to remain in the community;
2. Able to read and write English at sixth grade level or above;
3. Able to speak the local Native dialect;
4. Dependable and able to keep medical information confidential;
5. Physically able to handle the job;
6. Acceptable to most of the people of the community; and
7. Willing to leave home for periods of training.

The term "health aide" is often used prior to certification.

The community health practitioner curriculum is taught by the Alaska Native Health Service and some of the native health corporations in a collaborative program with UAF. In one area of the state, the Yukon-Kuskokwim, the community health practitioner curriculum is taught within the local UAF unit.

Since all students are employed in their villages, and most have families, the training at a center is separated into three periods of three to four weeks each, called Sessions I, II and III. The academic content of the three basic CHP courses is taught primarily during these three sessions. The field portion of the training is taught while the CHP works with a variety of health professionals, including radio or telephone contact with the local physician. The coordinator/instructor from the regional health corporation who gives the on-site instruction in the village is usually a mid-level health care provider. The visiting public health nurse emphasizes health education, surveillance and promotion.

Community Health Practitioner — Certificate

Prior to admission to the certificate level curriculum, Community Health Aide Presession I (*CHP 082*) is strongly recommended if available within the first month of hire. This can be waived if Session I is available within the same time period. The certificate level courses or basic courses equal 24 hours of UAF credit. The Community Health Aide student will receive 8 credits for each of the following courses:

	Credits
CHP 110 — Community Health Aide, Session I	8
CHP 111 — Community Health Aide, Session II	8
CHP 112 — Community Health Aide, Session III	8

The requirements for certification are kept uniform throughout the state by an academic review committee for CHA programs in Alaska, which is advisory to the administrative head of the Rural College. Currently the certification requirements are:
1. Complete Session I, II and III.
2. A preceptorship consisting of at least 30 hours of supervised clinical experience, preferably at the clinic or hospital to which the CHA refers patients.
3. Complete the Skills List.
4. Pass the written and practical "Certification Examination."
5. Field experience of 600 hours of work as a CHA.
6. Evaluation of the CHA's work in his/her own clinic by a coordinator/instructor, or other health professional that is rated as satisfactory.

The coordinator/instructor of a health corporation assists the CHA in meeting these requirements.

Completion of academic and field components of this training ordinarily requires 14 to 18 months. These credits may be applied to the associate of applied science degree: community health practitioner.

When the instruction is given in a program outside of the university, a certificate is awarded jointly by the university and the program doing the instruction.

Community Health Practitioner — A.A.S. Degree

The curriculum for this program is built upon the Community Health Practitioner Certificate Program and the associate of applied science degree requirements. Prior certification as a CHP is an entrance requirement into the Community Health Practitioner Associate Degree Program.

Because community health practitioners are employed in rural communities, a special office has been created within the Rural College to service their needs. UAF employs a Community Health Aide Program Coordinator to represent this program within the university and to relate to the many agencies involved in this training throughout the state.

The certified community health practitioners entering the degree program may avail themselves of course offerings from any of the units within the university including distant education. In addition, the Indian Health Service and the regional native health corporations may, with university approval, offer health-related courses for credit.

1. Complete the following general degree requirements:	*Credits*
Written Communication	6
(Engl. 111 plus any 200-level written communications course or applied written communications course as approved by the head of the program in which the degree is earned.)	
Oral Communication	3
Select a total of 6 credits from the following areas: humanities, social science, mathematics or natural science	6
(At least 3 credits shall be math or natural science at the 100 level or above.)	
Subtotal	15
2. Complete the following major specialty courses:	
24 hours of basic CHP courses and at least 6 hours of advanced CHP courses	30
3. Electives	15
Certificate Total	60

The major specialty for the community health practitioner degree can be satisfied by using the 24-hour block of credits in the CHP certificate program and 6 credits from the advanced courses listed below:

	Credits
CHP 202 — Emergency Care for Community Health Practitioners	3
CHP 203 — Clinical Update for Community Health Practitioners	2
CHP 206 — Life Coping Skills	2
CHP 207 — Maternal and Infant Health	2
CHP 208 — Communicable Disease	2
CHP 211 — Health Education	1

Nine of the 30 CHP credits awarded with the CHP certificate may be used as the applied studies requirement in the Associate of Arts (A.A.) degree.

Community Psychology

Rural College
Department of Behavioral Sciences and Human Services

Degree: M.A.
Minimum Requirements for Degree: 48 credits

The M.A. program in community psychology seeks to train graduate level practitioners in mental health and community development who can work sensitively and effectively in cross-cultural community contexts, and particularly in Native settings in rural areas and urban settings with multi-cultural populations. The program attempts to meet the demand for trained mental health professionals in rural Alaska.

For complete information on the graduate program in community psychology, see the UAF Graduate Catalog.

Computer Applications

School of Career and Continuing Education
Department of Business Systems and Technology

Special training programs

A wide array of computer courses are offered by SCCE. Computer application courses, programming courses and special user seminars are offered regularly. Special emphasis is placed on popular business application programs for both the Apple and IBM-compatible Compac computers. There are computer labs equipped with Compac, Apple IIe and Apple Macintosh computers at the UAF Downtown Center.

Computers are used in nearly all major industries and in large and small businesses. Mastery of one or more computer systems or software applications can greatly enhance career opportunities in many fields. In addition, computer programming is a growing and profitable cottage industry well suited to our environment. A complete certificate program is currently in the planning stage.

Computer Information Systems

School of Management
Department of Business Administration

Minor only

The computer information systems minor is designed to permit students in bachelor of arts and bachelor of science degree programs to study a particular field of computer systems and to be introduced to a reasonable segment of information systems relating to the business enterprise.

Requirements:

MINOR in Computer Information Systems

	Credits
Acct. 101 — Elementary Accounting I	3
Acct. 102 — Elementary Accounting II	3
B.A. 101 — Introduction to Management Information Systems	3
B.A. 201 — COBOL or	
CS 201 Computer Programming	3
B.A. 220 — Basic Programming Languages or	
CS 202 Computer Programming	3
B.A. 310 — Management Information Systems	3
Acct. 316 — Accounting Information Systems	3
Total	21

Computer Science

College of Liberal Arts
Department of Mathematical Sciences

Degrees: B.S., M.S.
Minimum Requirements: B.S. — 120 credits; M.S. — 30 additional credits

The computer science program is administered by the Department of Mathematical Sciences within the College of Liberal Arts. Computer science is the study of information handling and its application to the problems of the world. Computing is widely used in support of activities in science, engineering, business, law, medicine, education, and the social sciences. The potential for employment is one of the highest in the entire range of subjects spanned by the College of Liberal Arts.

Both the B.S. and M.S. degrees follow the recommendations of the Association for Computing Machinery (ACM) and the Institute for Electrical and Electronic Engineers (IEEE). The curriculum for the B.S. in computer science consists of a core of courses which introduces the student to the fundamentals of computer programming, hardware, theory, and applications. Mathematics and engineering play critical roles in the core. Throughout the curriculum the emphasis is on problem solving and applications of general principles to real-world problems. A solid background in fundamentals enables the graduate not only to understand today's computers and their uses, but also to understand and participate in future developments.

Requirements

Computer Science — B.S. Degree

1. Complete the general university requirements and B.S. degree requirements.

2. Complete the following mathematics requirement: *Credits*

Math. 200 — Calculus 4
Math. 201 — Calculus 4
Math. 210 — Calculus and the Computer 1
Math. 211 — Linear Algebra and the Computer 1
Math. 307 — Discrete Mathematical Structures 3
One of the following:
Math. 302 — Differential Equations (3 credits)
Math. 308 — Abstract Algebra (3 credits)
Math. 310 — Numerical Analysis (3 credits)
Math. 314 — Linear Algebra (3 credits)
Math. 371 — Probability (3 credits)
Math. 408 — Mathematical Statistics (3 credits)
Math. 460 — Mathematical Modeling (3 credits)
Stat. 301 — Elementary Probability and Statistics (3 credits)
Stat. 400 — Statistics (3 credits) 3

3. Complete the following major requirements:

C.S. 201 — Computer Programming I 3
C.S. 202 — Computer Programming II 3
C.S. 301 — Assembly Language Programming 3
C.S. 311 — Data Structures and Algorithms 3
C.S. 321 — Operating Systems 3
C.S. 331 — Programming Languages 3
C.S. 401 — Software Engineering 3
C.S. 411 — Analysis of Algorithms
or C.S. 451 — Automata and Formal Languages 3
E.E. 341 — Computer Organization I 4
E.E. 342 — Computer Organization II 4
Upper Division electives: either C.S. courses
or approved electives such as B.A. 310, E.E. 443, E.E. 454 6

4. Total Credits Required 120

MINOR in Computer Science

C.S. 201 — Computer Programming I 3
C.S. 202 — Computer Programming II 3
C.S. 301 — Assembly Language Programming 3
C.S. 311 — Data Structures and Algorithms or
C.S. 321 — Operating Systems 3
Elective selected from the following:
Any C.S. course (except C.S. 101) or
Math 210 and Math 211 — Calculus/Linear Algebra & Computer or
E.E. 341 — Computer Organization I or
B.A. 201 — COBOL or
B.A. 310 — Management Information Systems or
Acct 316 — Accounting Information Systems or
Other elective approved by advisor 2-3

Computer Science — M.S. Degree

The intent of the M.S. degree in computer science is to provide breadth and depth in coursework and to culminate with a major unifying project. The program is accessible to students who have completed a B.S. in C.S. at most institutions. Students from other fields who have completed a substantive portion of a Bachelor level computer science program may be admitted to the M.S. program. In such cases, undergraduate courses may be required to remedy deficiencies.

For complete information on the graduate program in computer science, see the UAF Graduate Catalog.

Culinary Arts

School of Career and Continuing Education
Service Industry Department

Certificate; Degree: A.A.S.
Minimum Requirements for Certificate — 32 credits; for Degree — 63 credits

The Culinary Arts Program prepares students for a career in the expanding field of culinary arts. Graduates can seek employment in food production or in the management of restaurants, bakeries, hotels, hospitals, camps or any facility that requires food service as part of its operation. This department offers both an associate degree and certificate programs. *Note: additional fees covering a uniform and supplies will be charged when students enroll in CAH 140 or CAH 240 level classes.*

Requirements

1. Complete the following general degree requirements: *Credits*

Written Communication 6
(Engl. 111 plus any 200-level written communications course or applied written communications course as approved by the head of the program in which the degree is earned.)
Oral Communication 3
Select a total of 6 credits from the following areas: humanities, social science, mathematics or natural science 6
(At least 3 credits shall be math or natural science at the 100 level or above.)
Subtotal 15

2. Complete the following major degree requirements: *Credits*

CAH 105 — Principles of Food Service 3
CAH 150 — Food Service Sanitation 1
CAH 152 — Supervisory Skills 2
CAH 154 — Dining Room Service 2
CAH 242 — Food Production I 4
CAH 243 — Food Production II 4
CAH 247 — Bakery Production II 4
CAH 248 — Bakery Production III 4
CAH 250 — Garde Manager 2
Subtotal 26
Select 18 credits from the following:
CAH 140 — Principles of Cooking 6
CAH 141 — Food Production I 6
CAH 145 — Principles of Baking 6
CAH 146 — Bakery Production I 6
Subtotal 18

3. Major specialty electives:
Select at least 4 credits from the following:

CAH 170 — Gourmet Cooking 2
CAH 199 — Externship 1-12
CAH 253 — Storeroom: Purchasing and Receiving 2
CAH 255 — Food Service Management 2
CAH 256 — Food Service Accounting 2
CAH 257 — Oenology and the Hospitality Industry I 1
Subtotal 4-12
Degree Total 63

Culinary Arts Certificate Program and Suggested Course Sequence:

First Year/Fall Semester *Credits*

CAH 105 — Principles of Food Service 3
CAH 140 — Principles of Cooking 6
CAH 145 — Principles of Baking 6
CAH 150 — Food Service Sanitation 1
Subtotal 16

First Year/Spring Semester *Credits*

CAH 141 — Food Production I 6
CAH 146 — Bakery Production I 6
CAH 152 — Supervisory Skills 2
CAH 154 — Dining Room Service 2
Subtotal 16
Certificate Total 32

Diesel/Heavy Equipment Mechanics

School of Career and Continuing Education
Trade and Industry Department

Certificate
Minimum Requirements for Certificate: 34 credits

The diesel and heavy equipment mechanics program offers the student training in the maintenance and repair of trucks, buses and heavy equipment. This one-year certificate program emphasizes "hands-on" training and in-class experience as students perform preventive maintenance inspections, determine causes of equipment problems and make necessary repairs and adjustment from tune-ups to complete engine and equipment overhauls. Students work on large truck fuel, electrical and air systems, diesel engines, transmissions, differentials, and crawler tractor undercarriages, steering and final drives. Class size is limited to 15 students to encourage instructor-student interaction and allow for individualized assistance. *An applied math proficiency exam must be passed to complete certificate requirements.*

Requirements

Diesel/Heavy Equipment Mechanics — Certificate

Suggested Course Sequence

Fall Semester	*Credits*
DSLT 150 — Diesel Mechanics I	7
DSLT 152 — Diesel Mechanics II	7
WMT 103 — Welding I	3
Subtotal	17
Spring Semester	
MECN 101 — Heavy Equipment/Mechanics I	7
MECN 102 — Heavy Equipment/Mechanics II	7
WMT 105 — Welding II	3
Subtotal	17
Certificate Total	34

Drafting Technology

School of Career and Continuing Education
Trade and Industry Department

Certificate
Minimum Requirements for Certificate: 30 credits

Two options in the drafting technology certificate program are offered: architectural drafting and civil drafting. Both are one-year programs (30 credits) which combine the technical know-how and "hands-on" experience necessary for work in a variety of drafting fields. Students work side by side with professionals from the architecture and engineering community, gaining valuable on-the-job experience. In the classroom, students develop skills in mathematics, drawing and lettering, architectural concepts and design and construction techniques.

Requirements

Drafting Technology — Certificate
Requirements and Suggested Course Sequence

Architectural Drafting

Fall Semester	*Credits*
DRT 100 — Introduction to Drafting	1
DRT 101 — Beginning Drafting I	4
DRT 121 — Building Trades Blueprint Reading	3
Math. 107 — Elementary Functions	3
Approved electives*	4
Subtotal	15
Spring Semester	
DRT 102 — Beginning Drafting II	2
DRT 140 — Architectural Drafting	4
DRT 151 — Civil Concepts	2
Math. 108 — Trigonometry	2
Approved electives*	5
Subtotal	15
Certificate Total	30

Civil Drafting

Fall Semester	*Credits*
DRT 100 — Introduction to Drafting	1
DRT 101 — Beginning Drafting I	4
DRT 121 — Building Trades Blueprint Reading	3
Math. 107 — Elementary Functions	3
Approved electives*	4
Subtotal	15
Spring Semester	
DRT 102 — Beginning Drafting II	2
DRT 150 — Civil Drafting	4
DRT 141 — Principles of Architectural Drafting	2
Math. 108 — Trigonometry	2
Approved electives*	5
Subtotal	15
Certificate Total	30

**Must be approved in advance (in writing) by the drafting program adviser.*

Early Childhood Development

School of Career and Continuing Education
Academic Programs

Certificate; Degree: A.A.S.
Minimum Requirements for Degree — 60 credits; for Certificate — 30 credits

The A.A.S. degree in early childhood development prepares students to find employment or to improve present job skills in early childhood and child care programs. Positions in child care centers, head start programs, early childhood education programs, child welfare service agencies and public school aid programs are potential career directions for program graduates. The A.A.S. degree in early childhood development also leads to state certification as an Early Childhood Education Associate II. A certificate program (30 credits) in early childhood development is also available.

Requirements

Early Childhood Development — A.A.S. Degree

1. Complete the following general degree requirements:	*Credits*
Written Communication	6
(Engl. 111 plus any 200-level written communications course or applied written communications course as approved by the head of the program in which the degree is earned.)	
Oral Communication	3
Select a total of 6 credits from the following areas: humanities, social science, mathematics or natural science	6
(At least 3 credits shall be math or natural science at the 100 level or above.)	
Subtotal	15
2. Complete the following major degree requirements:	*Credits*
*Psy 101 — Introduction to Psychology	3
Psy 245 —Child Development	3
ECHD 100 — Introduction to Early Childhood	3
ECHD 105 — Survey of Programs for Young Children	3
ECHD 110 — Practical Paths to Discipline and Guidance	1
ECHD 120 — Child Nutrition, Health and Safety	3
ECHD 131 — Group Management	1
ECHD 135 — Developing Programs for Infants/Toddler Care	2
ECHD 250 — Practicum I	3
ECHD 251 — Practicum II	3
ECHD 255 — Activities for Young Children	3
ECHD 260 — Introduction to the Exceptional Child	3
ECHD 265 — Culture Learning and the Young Child	2
Soc. 242 — The Family	3
Subtotal	45
3. Complete 15 credits of general electives	15
Degree Total	60

Recommended Electives: Any ECHD catalog or special topics (ECHD 193 or 293) courses. Courses from Applied Business or Counseling programs which have been approved by the ECHD adviser.

Early Childhood Development — Certificate

1. Complete the following required courses	*Credits*
Engl. 111 — Methods of Written Communication	3
Psy. 101 — Introduction to Psychology	3
Psy. 245 — Child Development	3
ECHD 100 — Introduction to Early Childhood Development	3
ECHD 105 — Survey of Programs for Young Children	3
ECHD 110 — Practical Paths to Discipline and Guidance	1
ECHD 120 — Child Nutrition, Health and Safety	3
ECHD 131 — Group Management	1
ECHD 135 — Developing Programs for Infants/Toddler Care	2
ECHD 250 — Practicum I	3
ECHD 255 — Activities for Young Children	3
Subtotal	28
2. Complete 2 credits of general electives	2
Certificate Total	30

**Can be used to meet general degree requirements.*

Early Childhood Education

Rural College
Kuskokwim Campus

Degree: A.A.S.
Minimum Requirements for Degree: 60 credits

The associate of applied science degree in early childhood education is the second step on the early childhood career ladder, which begins with the nationally recognized Child Development Associate (CDA) credential.

The CDA credential is valid proof of the holder's ability to work effectively with a group of children from three to five years old and serves as a seal of approval from the early childhood profession. The CDA student can receive competency based on-the-job training with the preschool classroom serving as a lab which comprises the six competencies of the CDA credential.

Students who desire a broader based education with future possibilities of working in a paraprofessional position or of continuing on to a baccalaureate degree will want to pursue the associate of applied science degree in early childhood education.

Requirements

Early Childhood Education — A.A.S. Degree

1. Complete the following general degree requirements:

	Credits
Written Communication	6
(Engl. 111 plus any 200-level written communications course or applied written communications course as approved by the head of the program in which the degree is earned.)	
Oral Communication	3
Select a total of 6 credits from the following areas: humanities, social science, mathematics or natural science	6
(At least 3 credits shall be math or natural science at the 100 level or above.)	
Subtotal	15

2. Complete the following major specialty requirements:

	Credits
ECDD 111 — A Safe Environment	1
ECDD 112 — A Healthy Learning Environment	1
ECDD 113 — Learning Environment	1
ECDD 121 — Physical Activities for Young Children	1
ECDD 122 — Cognitive Activities for Young Children	1
ECDD 123 — Communication Activities	1
ECDD 124 — Creative Activities for Young Children	1
ECDD 131 — Guidance and Discipline	1
ECDD 132 — Social Development for the Young Child	1
ECDD 211 — Developing Positive Self-Concepts in Children	1
ECDD 221 — Positive Home-Center Relationships	1
ECDD 222 — Program Management	1
ECDD 223 — Professionalism	1
ECDD 289 — Final Assessment for Child Development Associate Credential	1
Psy. 101 — Introduction to Psychology	3
Psy. 245 — Child Development	3

3. Complete 9 credits from the following courses of early childhood electives:

ECDD 109 — Introduction to Child Development Associate	1
ECDD 231 — Screening	1
ECDD 232 — Assessment/Recording	1
ECDD 233 — Mainstreaming Preschool Children with Special Needs	1
ECDD 299 — Practicum in Early Childhood	1-3
Ed. 304 — Literature for Children	3
Ed. 220 — Culture and Learning	3
Degree Total	60

Note: Students in ECDD courses must spend 32 hours per credit in an approved early childhood center.

Earth Science

College of Natural Sciences
Department of Geology and Geophysics

Degree: B.A.
Minimum Requirements for Degree: 130 credits

This program provides broad training in various aspects of earth science. It is especially applicable to those wishing to teach earth science or who are entering a field such as resource management where broad training in earth science is important. Basic course work is required in three program areas: geography, geology and mineral engineering. Additional required course work is arranged in consultation with the individual program heads. Students wishing to enroll in this degree program should contact the head of the Department of Geology and Geophysics.

Requirements

Earth Science — B.A. Degree

1. Complete the general university requirements and B.A. degree requirements.

2. Complete the following fundamental courses:
- **A.** Complete one year of college-level mathematics
- **B.** Complete one semester of college chemistry (Chem. 103 recommended) or one semester of college physics (Phys. 103 recommended)
- **C.** Complete one semester of computer science approved by major subject emphasis program head.

(NOTE: A. and B. may be used to meet general degree requirements, but C. is in addition to the 6 credit mathematics/logic degree requirements.)

3. For the major complex, complete 19 credits in the following courses (labs are optional but it is strongly recommended they be taken if offered): Geog. 205, 309 or 339, and 402; Geos. 101 or 261, and 112; Min. 101 and 103. In addition, complete an additional approved 10 credits at the 300 level or above with emphasis in either geography, geology and geophysics, or mineral engineering. Approval will be by the appropriate program head in the field of emphasis.

4. Complete an additional 12 credits of the following or approved alternative courses (can also be used to meet basic degree requirements and to apply toward minor requirements): ALR 101, 310, 380, 400, 401, 430; Biol. 103 or 105-106, 271; Geog. 301, 492; Geos. 213, 214, 304, 401, 408, 422; Min. 202; Pet.E. 103; G.E. 471. If these 12 credits are listed for the minor, they must be in a different field than the major.

5. Complete approved electives including minor requirements to bring total credits to 130.

Economics

School of Management
Department of Economics

Degrees: B.A., B.B.A.
Minimum Requirements for Degrees: B.A. — 120 Credits; B.B.A — 130 Credits

Economics is the study of those social activities 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 its relations with other economic systems is therefore essential to an understanding of the world in which we live.

The department considers the goal of its undergraduate instruction 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; and (3) to offer a course of study suitable for a minor in economics.

The Department of Economics offers work leading to the master of science degree in resource economics. The graduate program in economics is designed to develop economists for research and administrative positions in business, governmental agencies and other organizations. Graduate courses and seminars are offered in economic theory, econometrics, mathematical economics and resource economics.

Requirements

Economics — B.A. Degree

1. Complete general university requirements and B.A. degree requirements.

2. Complete the following program (major) requirements:

Foundation courses (may be used to meet B.A. general degree requirements where applicable):

	Credits
ACCT 101 — Elementary Accounting	3
ECON 201-202 — Principles of Economics I & II	6
MATH 161 — Algebra for Business and Economics	3
MATH 162 — Calculus for Business and Economics	4
PS 101 — American Government and Politics	3
PS 102, 202, 211 or 301 —	3
BA 101 — Intro. to Management Information Systems or	
CS 201 — Computer Programming I	3

Complete 30 additional credits in Economics including:	Credits
ECON 226 — Introduction to Statistics for Economics & Business	3
ECON 227 — Intermediate Statistics for Economics and Business	3
ECON 321 — Intermediate Microeconomics	3
ECON 324 — Intermediate Macroeconomics	3
*Electives in Economics	18

*Must be 300-level or higher in which 6 credits of the following courses may be included: BA 325, 343, 360, 423, 425, 480; and ANS 415.

3. Minimum credits required 120

Economics — B.B.A. Degree
1. Complete general university requirements and B.B.A degree requirements. The 6 credit humanities electives shall include a combination of courses (classified as humanities) in which 3 credits shall be selected from either philosophy, English (other than composition) or foreign language at the 200 level or above.
2. Complete the following statistics requirements:

Econ. 226 — Intro. to Statistics for Economics and Business 3
Econ. 227 — Intermed. Statistics for Economics and Business 3

3. Complete the following program (major) requirements:

Common Body of Knowledge (CBK) Requirements	*33 Credits*
Acct. 101 and 102 — Elementary Accounting	6
B.A. 310 — Intermed. Management Information Systems or	
Acct. 316 — Accounting Information Systems	3
(For those students pursuing a double major in accounting and economics.)	
B.A. 101 — Intro. to Management Information Systems	3
B.A. 325 — Financial Management	3
B.A. 331 — Business and Law	3
B.A. 343 — Principles of Marketing	3
Econ. 324 or 350 — Intermediate Macroeconomics or Money and Banking	3
B.A. 360 — Operations Management	3
B.A. 390 — Organizational Behavior	3
B.A. 462 — Administrative Policy	3
Economics Major Requirements	*27 Credits*
A. General Requirements	
P.S. 201, 211, 263, or 302	3
B. Economics Requirements	
Econ. 321 — Intermediate Microeconomics	3
Econ. 324 — Intermediate Macroeconomics (if not taken in CBK)	0-3
Econ. 463 — International Economics	3
Nine hours from the following courses (At least three hours must be at the 400 level): Econ. 335, 350, 351, 409, 420, 436, 437, 438, 451, and ANS 415	6-9*
Electives approved by major advisor	9**
C. Free Electives	
These credits may be used for an optional minor or second BBA Major. (At least 3 credits must be in courses offered outside of School of Management.)	20 Credits

3. Minimum credits required 130

*Only six credit hours of electives in this category are required if Econ 350 is taken as part of the CBK.
**Courses in this category must at the upper division level and may be accounting, business, or economics courses, where three (3) credits must be taken in either accounting or business administration. Courses in this category may be utilized to satisfy the requirements of other BBA degree majors.

MINOR in Economics:
All minor programs must be approved by the head of the Economics Department.

A minor in Economics requires:	*Credits*
Econ. 201 — Principles of Economics I	3
Econ. 202 — Principles of Economics II	3
9 credits in approved economics courses at the 300-level or above	9
Total	*15*

Education

Rural College
Department of Education

Degrees: B.Ed., B.T., M.Ed., Ed.S.
Minimum Requirements for Degrees: B.Ed., B.T. — 130 credits; M.Ed. — minimum of 36 additional credits; Ed.S. — minimum of 30 credits beyond master's.

Certification — Students may qualify for teaching certificates in various states only by planning their programs to meet specific requirements. Certificates are issued by the appropriate state department of education. In Alaska, certificates are granted by the Alaska Department of Education in Juneau. Students who obtain the B.Ed. degree will meet the current academic requirements for Alaskan certification. Students seeking a minor in education should consult with the faculty of the Department of Education during their freshman year to obtain specific requirements. Individuals who hold bachelor's degrees and wish to obtain certification should also consult with the faculty of the Department of Education.

Cross-Cultural Education Development Program — The X-CED program is the teacher education program delivered through the University of Alaska Fairbanks' rural campuses to serve the unique educational needs of Alaska's village residents. Full-time education faculty members are responsible for coordinating program activities within each region through the regional campuses located in Barrow (North Slope), Bethel (Kuskokwim), Dillingham (Bristol Bay), Fairbanks, Kotzebue (Chukchi), and Nome (Northwest). The X-CED program offers full-time undergraduate course work in education for students seeking a B.Ed. degree. Available degree majors, minors and concentration areas are limited by faculty resources. Priority for enrollment in field-based courses is given to students formally admitted to the program, but are available to other students on a space-available basis and with permission of the instructor. Applicants for admission to the program are reviewed and recommended by regional panels.

In addition, the program provides supplemental services including workshops, technical assistance and other support services as time and resources permit.

All inquiries should be addressed to the program coordinator's office at each campus, or the Chairman, Department of Education, Fairbanks campus.

Teachers for Alaska Program

This program is designed to provide teaching certification to students with a baccalaureate degree who want to teach at the secondary school level either in small rural schools or in Alaska's urban multicultural secondary schools. The program offers two options: 1) secondary certification in a subject area, or 2) K-12 small schools certification. Students participate in a full-time program that features small seminars, an apprenticeship, a cohort student group, and a graduate level approach to preparation for teaching.

Students enroll in a fall and spring/late spring block of integrated, tightly sequenced courses. The fall program consists of Ed. 582 — Teaching as Reflective Inquiry, Ed. 583 — Teaching as Decision-Making and Invention, and Ed. 584 — Practicum. The spring/late spring block consists of Ed. 453 or Ed. 455 — Student Teaching, Ed. 619 — Reflective Inquiry into Multi-Cultural Classrooms and Communities, and Ed. 692 — Designing Learning Environments. The K-12 certification option requires additional course work.

Inquiries should be addressed to the Teachers for Alaska program office on the Fairbanks campus.

Acceptance to Teacher Education

Any student wishing to become certified for teaching through the University of Alaska Fairbanks must formally apply for admission and be accepted to the teacher education program. The application process should be initiated during enrollment in Ed. 201, or, for transfer students and in other special cases, at least during the semester prior to enrolling in any methods courses. **Acceptance to teacher education must occur before enrolling in education methods courses** *(Ed. 419, 381, and 421 for elementary education and Ed. 402 and 430 for elementary education).* Continuation in teacher education is based upon the maintenance of satisfactory performance in all areas of the program.

Criteria for Admission to Teacher Education

The Admissions Committee will consider a variety of information, including the following:

A. Academic competence
B. Successful experiences in one or more of the following contexts:
   1. public school classrooms
   2. other settings with children
   3. rural Alaska
C. Interpersonal, intercultural, and communication skills
D. Any and all additional standards set by the State

These factors will be assessed by faculty rating forms, letters of reference, university grade point average, and evaluations from University-sponsored practicum placements.

Requirements

Education — B.Ed. Degree
1. Complete general university requirements.
2. Complete the following degree and program (major) requirements:

	Credits
A. Communication	9
Engl. 111 — Methods of Written Communication	3
Engl. 211 — Intermediate Exposition with Modes of Literature or	
Engl. 213 — Intermediate Exposition	3
Speech Communication Elective	3
B. Humanities	12
Ling. 101 — Nature of Language or	
ANL 215 or 216 — Alaska Native Languages	3
Electives	9
(Upper division American Literature recommended)	

C. Social Sciences 24
Anth. 242 — Native Cultures of Alaska 3
Hist. 131 or 132 — History of the U.S. 3
History Elective 3
P.S. 101 — Intro. to Amer. Government and Politics 3
P.S. 263 — Alaska Native Politics *or*
ANS 310 — The Political Economics of ANCSA 3
Psy. 101 — Introduction to Psychology 3
Psy. 240 — Devel. Psychology in Cultural Perspective 3
Elective 3
D. Mathematics and Natural Science 16
For Elementary Education:
Math. 205 — Math. for Elementary School Teachers 3
Math. Electives 6
Science Electives (including laboratory science) 7
For Secondary Education:
Math. Electives 6
Science Electives (including laboratory science) 7
Math. or Science Elective 3
E. Education
Ed. 201 — Introduction to Education 3
Ed. 330 — Diagnosis and Evaluation of Learning 3
Ed. 350 — Communications in Cross-Cultural Classrooms 3
Ed. 375 — The Exceptional Learner 3
Education Foundation Elective 3
Approved Health/Nutrition Elective 3

For Elementary Education:
Ed. 304 — Literature for Children 3
Ed. 310 — Modes of Creative Expression in Education *or*
Mus. 309 — Elementary School Music Methods 3
Ed. 381 — Foundations of Literacy Development 3
Ed. 419 — Integ. Meth. and Curriculum Development 6
Ed. 421 — Strategies for Reading and Writing Instruction in Multicultural Classrooms 3
P.E. 327 — Movement Activity for Children *or*
Approved Elective 2-3
Ed. 452 — Elementary Student Teaching 12
(Candidates who have taught successfully two years in the public elementary schools may request a reduced student teaching experience. Candidates wishing to so petition should see the coordinator of the Office of Practica Experience.
Complete one of the concentrations listed below:
Elementary Education Concentrations: Each concentration must have a minimum of 12 upper division credits. General education requirements (not including Communication requirements) may be counted toward these concentrations.
1. Humanities 24
At least 12 credits from one of the following subjects:
Art
English
Music
2. Social Sciences 36
At least 12 credits concentrated in one subject area
3. Math and/or Science 28
At least 15 credits concentrated in math or in one natural science
4. ESL/Applied Linguistics 21
Engl. 318 — Modern English Grammar 3
Engl. 462 — Applied English Linguistics 3
ANS 320 — Language and Ethnicity *or*
Anth. 204 — Language and Culture 3
6 Credits in a Language 6
Approved Linguistics 6
5. Alaska Native Language/Bilingual 25-27
16-18 credits in one Alaska Native Language 16-18
ANL 387-388 — Bilingual Meth. and Materials 6
ANL 215 — Alaska Native Language *or*
ANL 216 — Alaska Native Language 3
6. Early Childhood Development 18
12 credits of approved Early Childhood Development courses
6 upper division credits from one of the following:

Art	Physical Education
English	Speech
Music	Theater

For Secondary Education:
Ed. 407 — Reading Strat. for Secondary Teachers 3
Ed. 424 — Small High School Programs *or*
Ed. 425 — Community as an Educational Resource 3
Ed. 402 — Methods of Teaching in Secondary School *or*
Approved Substitute 3
Ed. 430 — Multicultural Teaching Techniques 3
Ed. 490 — Curriculum Development 3
Ed. 453 — Secondary Student Teaching 12
(Candidates who have taught successfully two years in the public secondary schools may request a reduced teaching experience. Candidates wishing to so petition should see the coordinator of the Office of Practica Experience.
Complete one of the interdisciplinary major/minors listed below:
1. Language Arts/Humanities 48
(must include a minimum of 12 upper division credits)
Engl. 111 — Methods of Communication 3
Engl. 211 — Intermediate Exposition with Modes of Literature *or*
Engl. 213 — Intermediate Exposition 3
English Electives 9
Journalism, Speech Communication and Theater 6
Alaska Native Languages, Foreign Languages and Literature, Linguistics 6
Alaska Native Studies (courses classified as humanities only), Art, Humanities, Music, Philosophy 9
Electives from above areas 12
2. Math./Science 45
(Must include a minimum of 12 upper division credits)
Hum. 202 — Unity in the Sciences 3
Math. Electives (minimum 6 credits upper division) 15
Science electives (minimum 6 credits upper division) 27
A minimum of 6 credits from *each* of the following fields:
Biology, Chemistry, Physics, Geoscience
3. Social Sciences 48
History Electives 12
(Recommended: Hist. 101-102 — Western Civilization, Hist. 131-132 — History of the U.S.)
Anthropology Electives 6
(Recommended: Anth 200 — Social/Cultural Anthropology, Anth 242 — Native Cultures of Alaska)
Political Science Electives 6
(Recommended: P.S. 101 — Introduction to Amer. Govt. and Politics, P.S. 263 — Alaska Native Politics)
Geography Electives 6
(Recommended: Geog. 101 — Introductory Geography or Geog. 103 — World Economic Geography
Economics Electives 6
(Recommended: Econ. 202 — Prin. of Econ. I, Econ. 201 — Prin. of Econ. II or Econ. 137 — The Alaskan Economy or Econ. 235 — Intro. to Natural Resource Economics)
Upper Division Social Science Electives 12
Selected from the following areas (minimum of 9 credits in one area): History, Anthropology, Sociology, Geography, Political Science, Economics.
Minimum Credits Required 130

MINOR in Education — With or Without Teacher Credential Endorsement
Bachelor of arts and bachelor of science degree candidates may use the credential endorsement requirement as a minor in Education. STUDENTS MAY HAVE A MINOR IN EDUCATION WITHOUT STUDENT TEACHING BUT THEY MUST HAVE STUDENT TEACHING IF THEY WISH TO MEET CERTIFICATION REQUIREMENTS FOR TEACHING.

All majors in other departments who wish to obtain an Alaska teaching certificate should confer with Department of Education 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 be admitted to the Teacher Education Program prior to acceptance for placement in student teaching in the public schools. Students may be endorsed for secondary certification only in majors which have been approved by the Alaska Department of Education.

MINOR in Elementary Education (WITH credential endorsement):

	Credits
Psy. 240 — Developmental Psychology in Cross-Cultural Perspective	3
Ed. 201 — Introduction to Education	3
Ed. 304 — Literature for Children	3
Ed. 330 — Diagnosis and Evaluation of Learning	3
Ed. 375 — The Exceptional Learner	3
Ed. 381 — Foundations of Literacy Development	3
Ed. 419 — Integrated Methods and Curriculum Development	6
Ed. 421 — Strategies for Reading and Writing Instruction in Multicultural Classrooms	3
Ed. 452 — Elementary Student Teaching*	12

* A minimum of 6 credits of math is required for admission to student teaching. (Math. 205 and 206 are recommended.)

One course from the following:
Ed. 345 — Sociology of Education 3
Ed. 346 — Structure of American Education 3
Ed. 350 — Communication in Cross-Cultural Classrooms 3

Ed. 380 — Cultural Influences in Education 3
Ed. 450 — Education and Cultural Transmission 3

MINOR in Elementary Education (WITHOUT credential endorsement):
Complete the Elementary Education minor requirements excluding Ed. 452 - Elementary Student Teaching.

MINOR in Secondary Education (WITH credential endorsement):

Psy. 240 — Developmental Psychology in Cross-Cultural Perspective 3
Ed. 201 — Introduction to Education 3
Ed. 330 — Diagnosis and Evaluation of Learning 3
Ed. 375 — The Exceptional Learner 3
Ed. 402 — Methods of Teaching in the Secondary School 3
Ed. 407 — Reading Strategies for Secondary Teachers 3
Ed. 424 — Small High School Programs or
Ed. 425 — Community as an Educational Resource 3
Ed. 430 — Multicultural Teaching Techniques 3
Ed. 453 — Secondary Student Teaching 12

One course from the following:
Ed. 345 — Sociology of Education 3
Ed. 346 — Structure of American Education 3
Ed. 350 — Communication in Cross-Cultural Classrooms 3
Ed. 380 — Cultural Influence in Education 3
Ed. 450 — Education and Cultural Transmission 3

MINOR in Secondary Education (WITHOUT credential endorsement):
Complete the Secondary Education minor requirements excluding Ed. 453 - Secondary Student Teaching.

Admission to Student Teaching
Retention in the teacher education program is contingent upon a second formal review prior to student teaching. This review will involve assessment of all criteria used for admission with the expectation that continued acceptable performance and/or appropriate growth will be noted in all areas. Applications for student teaching are due by October 1 or February 15 during the semester previous to the planned semester of student teaching. Placement for student teaching will proceed upon the determination that the application is acceptable.

Criteria 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 the Office of Clinical Practice by October 1 for student teaching in the following spring semester and by February 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 six credits in mathematics; Psy. 240, Ed. 330, 419 and 423.
f. A minimum grade of "C" in required math courses and in each required education course.
g. Approval of Committee on Admission to Teacher Education to enter student teaching.
h. A maximum of 15 credits is permitted while enrolled in student teaching. These 15 credits include the 12 credits granted for student teaching.
i. Those students who meet all of the above requirements at another university must take at least 9 credits of education courses at UAF.
j. Students who feel they have experience comparable to Student Teaching must demonstrate their competence. See the coordinator of the Office of Practica Experience regarding this procedure.

2. Secondary Schools — seventh through twelfth grades:

a. Acceptance to the teacher education program.
b. A formal application on file with the director of the Office of Clinical Practice by **October 1** for student teaching in the following spring semester and by **February 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. 240, Ed. 330, 402, 407 and 430.
g. A maximum of 15 credits is permitted while enrolled in student teaching. These 15 credits include the 12 credits granted for student teaching.
h. A minimum grade of "C" in each education course.
i. Approval of Committee on Admission to the Teacher Education Program to enter student teaching.
j. Those students who meet all of the above requirements at another university must take at least 9 credits of education courses at UAF.
k. Students who feel they have experience comparable to Student Teaching must demonstrate their competence. See the coordinator of the Office of Practica Experience regarding this procedure.

3. Students who fail Student Teaching will be exited from the Teacher Education Program. Further involvement with the Teacher Education Program is dependent upon a reapplication process. See the coordinator of the Office of Practica Experience regarding this procedure.

Education — B.T. Degree*
A certifiable secondary education program in the technical areas of: food services technology, aviation technology and electronics technology.

1. Complete general university requirements and B.T. degree requirements.
2. Complete the following major complex requirement beyond the associate degree major:

	Credits
A. Upper-division credit in technical specialty	0-6
B. Complementary area: Education	
Psy. 240 — Developmental Psychology in Cross-Cultural Perspective	3
Ed. 201 — Introduction to Education	3
Ed. 330 — Diagnosis and Evaluation of Learning	3
Ed. 375 — The Exceptional Learner	3
Ed. 402 — Methods of Teaching in the Secondary School or Subject Area Methods course	3
Ed. 407 — Reading Strategies for Secondary Teachers	3
Ed. 424 — Small High School Programs or	
Ed. 425 — Community as an Educational Resource	3
Ed. 430 — Multicultural Teaching Techniques	3
Ed. 453 — Secondary Student Teaching	12
Education Foundation Elective	3
3. Minimum credits required for degree	130

M.Ed. Degree
This program offers several options from which a person selects an area of specialization. Inquiries concerning options and the specific requirements of each option should be directed to the Department of Education.

Education — Ed.S. Degree
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.

For complete information on the graduate programs in education, see the UAF Graduate Catalog.

Electrical Engineering

School of Engineering
Department of Electrical Engineering

Degrees: B.S., M.E.E., M.S.
Minimum Requirements for Degrees: B.S. — 133 credits; M.S. — 30 additional credits; M.E.E. — 32 additional credits

Electrical engineering encompasses the areas of computer applications and design, electrical power transmission and distribution, telecommunications and electronics. The electrical engineer designs and oversees the construction, installation and maintenance of electrical systems providing light, heat and power. Engineers design the communication systems of telephone, radio and television as well as the transistors and integrated circuits used in these systems. People trained in computer engineering automate businesses, factories, pipelines and refineries; and design control systems and computers which guide trains, planes and space vehicles. Even the test devices and tools of investigation — in medicine, in physics, in geology and in other sciences — are today largely electronic.

The scope of electrical engineering has expanded tremendously in recent years. Many developments have been important in this expansion, including automatic control theory, environmental monitoring, communications theory, new geophysical instrumentation, extra-high voltage power transmission, medical electronics, plasmas, magnetohydrodynamics, integrated circuits, satellites, and mini and microcomputers. The process controls in the extraction, transmission and refining of petroleum products are largely the responsibility of the electrical and computer engineer. Development of techniques for utilizing new energy sources presents a challenge, requiring much imagination and

resourcefulness. Advanced training in engineering science and mathematics is required for creative work in these areas.

The curriculum is designed to insure that basic fundamentals are learned, as well as specialized skills. The practical needs of engineers who plan to enter practice immediately upon graduation, as well as the theoretical background needed for individuals planning to pursue graduate studies, have been taken into account in our program. Candidates for the bachelor of science degree will be required to take the State of Alaska Engineer-In-Training Examination in their general field.

Requirements

Electrical Engineering — B.S. Degree

1. Complete the general university requirements.
2. Complete the following degree and program (major) requirements. Students must plan their elective courses in consultation with their electrical engineering faculty advisor, and all elective courses must be approved by their electrical engineering faculty advisor. At least 6 of the 16 social science and humanities elective credit must be: (a) above the 100 level; or (b) advanced courses in a 100 level sequence. Sufficient depth in at least one of the areas must be demonstrated by evidence of a sequence of courses. This sequence must be approved by the students' departmental advisor.

First Year

Fall Semester — *16 credits*
- Engl. 111 — Methods of Written Comm. ... 3
- Math. 200 — Calculus ... 4
- E.S. 101 — Descriptive Geometry for Engineers ... 2
- Soc. Sci. or Humanities Elective* ... 3
- Chemistry 105 — General Chemistry ... 4

Spring Semester — *17 credits*
- Speech Comm. Elective ... 3
- Math. 201 — Calculus ... 4
- E.E. 102 — Intro. to Electrical Engineering ... 3
- Chem. 106 — General Chemistry ... 4
- Soc. Sci. or Humanities Elective ... 3

Second Year

Fall Semester — *15 credits*
- Math 202 — Calculus ... 4
- Phys. 211 — General Physics ... 4
- E.S. 201 — Computer Techniques ... 3
- E.E. 203 — Fund. of Elec. Engineering ... 4

Spring Semester — *15 credits*
- Math 302 — Differential Equations ... 3
- Phys. 212 — General Physics ... 4
- E.S. 208 — Mechanics ... 4
- E.E. 204 — Fund. of Elec. Engineering ... 4

Third Year

Fall Semester — *17 credits*
- E.E. 333 — Physical Electronics ... 4
- E.E. 353 — Circuit Theory I ... 3
- Approved Math Elective** ... 3
- Soc. Science or Humanities elective ... 3

Option I: Communications
- E.E. 311 — Applied Engineering Electromagnetics ... 3
- E.E. 331 — High Frequency Lab ... 1

Option II: Power and Control
- E.E. 303 — Electrical Machinery ... 4

Option III: Computer Engineering
- E.E. 442 — Digital Syst. Anal. & Design I ... 4

Spring Semester — *18 credits*
- E.E. 334 — Electronic Circuit Design ... 4
- E.E. 354 — Engineering Signal Analysis ... 3
- Engl. 211 — Intermediate Exposition, with Modes of Literature or
- Engl. 213 — Intermediate Exposition ... 3
- E.E. 471 — Fundamentals of Automatic Control ... 4

Option I: Communications
- E.E. 312 — Electromagnetic Waves and Devices ... 3
- E.E. 332 — Electromagnetics Laboratory ... 1

Option II: Power and Control
- E.E. 404 — Electric Power Systems ... 4

Option III: Computer Engineering
- E.E. 443 — Digital Systems Analysis and Design II ... 4

Fourth Year

Fall Semester — *18 credits*
- Soc. Science or Humanities Elective ... 3

Option I: Communications
- Approved Engineering Science Elective*** ... 3
- E.E. 303 — Electrical Machinery ... 4
- E.E. 442 — Digital Systems Analysis and Design I ... 4
- E.E. 461 — Communications Systems ... 4

Option II: Power and Control
- Approved Engineering Science Elective*** ... 3
- E.E. 311 — Applied Engineering Electromagnetics ... 3
- E.E. 331 — High Frequency Lab ... 1
- E.E. 406 — Electrical Power Engineering ... 4
- E.E. 442 — Digital Systems Analysis and Design I ... 4

Option III: Computer Engineering
- E.E. 303 — Electrical Machinery ... 4
- E.E. 311 — Applied Engineering Electromagnetics ... 3
- E.E. 331 — High Frequency Lab ... 1
- E.E. 451 — Digital Signal Processing ... 3
- E.E. 461 — Communications Systems ... 4

Spring Semester — *17 credits*
- E.S.M. 450 — Economic Analysis and Operation ... 3
- Soc. Science or Humanities Electives ... 4
- Approved Engineering Science Elective*** ... 3
- Approved E.E. Elective ... 3-4
- Approved E.E. Design Elective ... 3-4
- Must take State of Alaska Engineer-in-Training Examination

*Social Science/Humanities elective and E.S. 201 may be interchanged if student's mathematics preparation allows.

**Mathematics elective to be chosen from the following advanced topics: linear algebra and matrices, probability and statistics, partial differential equations, numerical analysis, advanced calculus or complex variables.

***Engineering science elective to be chosen from ES 331, ES 334, ES 341 and ES 346.

Electrical Engineering — M.S. or M.E.E. Degree

Graduate degree programs in electrical engineering are closely connected with research activities of the faculty. Research areas in electrical engineering emphasize high latitude problems. They include data communications, telecommunications, electromagnetic wave propagation, satellite communications, digital and physical electronics, computer and microcomputer applications including remote biomedical and environmental instrumentation, electric energy system analyses, electric power quality improvement, geomagnetic storm interaction with electric energy systems, system identification and simulation and digital signal processing.

Graduate students whose goal is broad professional practice will ordinarily choose the M.E.E. program; those who wish to emphasize research and advanced specialized study usually elect the M.S. degree program, which includes a thesis.

For complete information on the graduate programs in Electrical Engineering, see the UAF Graduate Catalog.

Engineering Management

School of Engineering
Department of Engineering and Science Management

Degrees: M.S.
Minimum Requirements for Degrees: 33 credits (beyond a bachelor's degree in an engineering 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 management principles. In addition to an undergraduate degree, a candidate should have had on-the-job experience in engineering.

Candidates for the engineering management degree must hold a previous degree in an engineering discipline. (See also "Science Management".)

For complete information of the graduate program in engineering management, see the UAF Graduate Catalog.

English

College of Liberal Arts
Department of English

Degrees: B.A., M.A., M.F.A.
Minimum Requirements for Degrees: B.A. — 130 credits; M.A. — 30 additional credits; M.F.A. — 45 additional credits

The work of the Department of English includes the two functions traditionally associated with the discipline — teaching basic and advanced courses in writing and offering survey and advanced courses in English, American and world literature both to English majors and minors and to students in other fields who may choose the courses as electives. In addition, the department offers courses in English linguistics and Alaskan literature.

Requirements

English — B.A. Degree
A. Emphasis: Literature
1. Complete the general university requirements and B.A. degree requirements.
2. Complete the following program (major) requirements: 36 credits in English besides English 111 and English 211 or 213, including:

Credits

a. Engl. 301 — Continental Literature in Translation: From the Ancient World through the Renaissance 3
Engl. 310 — Literary Criticism 3
b. Complete the following surveys of British and American Literature:

American Literature:
Engl. 306 — Survey of American Literature 3

British Literature:
Engl. 308 — Survey of British Literature: Beowulf to the Romantic Period 3
Engl. 309 — Survey of British Literature: Romantic Period to the Present 3

c. One course from the following:
Engl. 403 — American Renaissance
Engl. 404 — American Realism
Engl. 405 — British Writers of the 19th Century: Romantic Period
Engl. 406 — British Writers of the 19th Century: Victorian Period
Engl. 407 — English Writers of the 18th Century: Restoration and Neo-Classical Period
Engl. 408 — American Origins 3

d. Engl. 422 or 425 — Shakespeare 3

e. One course from the following:
Engl. 318 — Modern English Grammar
Engl. 462 — Applied English Linguistics
Engl. 472 — History of the English Language 3

f. Four courses chosen from 300-400 levels in English with at least two courses on 400 level 12

3. Minimum Credits Required 130

B. Emphasis: Writing
1. Complete the general university requirements and B.A. degree requirements.
2. Complete the following program (major) requirements: 36 credits in English besides English 111 and English 211 or 213 including:

Credits

a, b, c, and d as listed in the requirements for a major with emphasis on literature 21

e. Two courses from the following:
Engl. 444 — Fiction in Translation
Engl. 445 — 20th Century Drama: From Chekhov to Ionesco
Engl. 446 — Major Modern and Contemporary Poetry
Engl. 447 — 20th Century British Prose
Engl. 448 — 20th Century American Prose
Engl. 452 — The British Novel to 1900 6

f. Engl. 313 — Writing Non-Fiction Prose 3
Engl. 371 — Intermediate Creative Writing 3

g. One course chosen from 300-400 English Department Courses 3

3. Minimum Credits Required 130

C. Emphasis: Teaching
1. Complete the general university requirements and B.A. degree requirements.
2. Complete the following program (major) requirements: 36 credits in English besides English 111 and English 211 or 213, including:

Credits

a. Same as listed under a, b, and d for literature emphasis 18
b. Engl. 318 — Modern English Grammar 3
Engl. 472 — History of the English Language 3

c. Engl. 313 — Writing Non-Fiction Prose 3
Engl. 485 — Teaching Composition in the Schools 3
d. Two elective courses from the following 6
All 300-level English, Engl. 444, 445, 446, 447, 448, or 462
3. Minimum Credits Required 130

MINOR in English:
a, b, c, and d as listed in the requirements for a major with emphasis on literature 21

English — M.A. Degree; Professional Writing — M.A. Degree; Creative Writing — M.F.A. Degree

The master of arts degree focuses on scholarly research in British and American literature. The master of arts in professional writing prepares students to work as professional writers and editors in such settings as private and public corporations, government agencies and research institutions. The master of fine arts degree centers on the writing of original, imaginative work in poetry, fiction, drama, and/or non-fiction. Both degree programs require students to take a large proportion of graduate literature courses and to engage in research and writing. Master of arts candidates write theses in literary scholarship. After being admitted to one of these degree programs, a graduate student may apply for one of the department's teaching assistantships.

For complete information on the graduate programs in English, see the UAF Graduate Catalog.

Environmental Quality Engineering and Science

School of Engineering
Department of Civil Engineering

Degrees: M.S.
Minimum Requirements for Degree: 30 credits (beyond a bachelor's degree)

The environmental quality engineering curriculum is administered through the civil engineering department and is designed for graduate engineers and science majors who will pursue careers in the areas of water supply, treatment, and distribution; waste treatment, stream pollution, air pollution, solid-waste disposal, hazardous and toxic waste management, and environmental impact evaluation. Consideration is given for broad study of the environment, prevention and abatement of quality deterioration, and solutions to environmental problems. Graduates will be prepared to hold positions in federal, state, and municipal organizations as well as in consulting engineering offices. For students having non-engineering degrees, an interdisciplinary program is available leading to the master of science in environmental quality science.

For complete information on the graduate program in environmental quality engineering and science, see the UAF Graduate Catalog.

Eskimo

College of Liberal Arts
Department of Alaska Native Languages

Degree: B.A.
Minimum Requirements for Degree: 130 credits

Requirements

Inupiaq Eskimo — B.A. Degree
1. Complete the general university requirements and B.A. degree requirements.
2. Complete the following program (major) requirements:

Credits

Esk. 111-112 — Elementary Inupiaq Eskimo 10

Esk. 211-212 — Intermediate Inupiaq Eskimo 6
ANL 215 — Eskimo-Aleut Languages 3
Esk. 417 — Advanced Inupiaq Eskimo 3
Ling. 101 — The Nature of Language
or ANS 320 — Language and Culture 3

Complete three of the following:
Esk. 417 — (Additional) Adv. Inupiaq Eskimo 3
ANL 387 — Bilingual Methods and Materials 3
Anth. 242 — Native Cultures of Alaska 3
Anth. 380 — Peoples of Alaska Southwest 3
Anth. 381 — Inupiaq and Yup'ik People 3
Hist. 110 — History of Alaska Natives 3
P.S. 263 — Alaska Native Politics 3
Engl. 349 — Narrative Art of Alaska Native Peoples
(in English translation) 3
Ling. 318 — Phonology 3
Ling. 320 — Syntax 3
Ling. 410 — Second Language Teaching 3
Ling./Ed. 303 — Language and Literacy Development 3
Ling. 350 — Historical Linguistics 3
Ling. 450 — Language Policy and Planning 3
ANL 216 — Indian Languages of Alaska 3
A course in Yupik Eskimo or other approved subject 3
Mus. 223 — Native Alaskan Music 3
3. Minimum Credits Required 130

Yupik Eskimo — B.A. Degree
1. Complete general university requirements and B.A. degree requirements.
2. Complete the following program (major) requirements:

	Credits
Esk. 101-102 — Elementary Yupik Eskimo	10
Esk. 201-202 — Intermediate Yupik Eskimo	6
Esk. 301 — Advanced Yupik Eskimo	3
Esk. 415 — Additional Topics in Advanced Yupik Eskimo	3
ANL 215 — Alaska Native Languages	3
Ling. 101 — Nature of Language *or* ANS 320 — Language and Culture	3

Complete two of the following:
ANL 387 — Bilingual Methods and Materials 3
Anth. 242 — Native Cultures of Alaska 3
Anth. 380 — Peoples of Alaska Southwest 3
Anth. 381 — Inupiaq and Yup'ik People 3
Hist. 110 — History of Alaska Natives 3
P.S. 263 — Alaska Native Politics 3
Engl. 349 — Narrative Art of Alaska Native Peoples
(in English translation) 3
Ling. 303/Ed. 303 — Language and Literacy Development 3
Ling. 318 — Intermediate Phonetics and Phonology 3
Ling. 320 — Introductory Syntactic Theory 3
Ling. 350 — Historical Linguistics 3
Ling. 450 — Language Policy and Planning 3
ANL 216 — Indian Languages of Alaska 3
A course in Inupiaq Eskimo or other approved subject 3
Mus. 223 — Native Alaskan Music 3
3. Minimum Credits Required 130

MINOR in Eskimo
A minor in Eskimo requires 15 credits in Eskimo.

Financial Institutions Management

School of Career and Continuing Education
Business Systems and Technology Department

Degree: A.A.S.
Minimum Requirements for Degree: 60 credits

The financial institutions management program is designed to meet the specific training needs of local financial institutions. This program was developed with the assistance of local industry leaders and representatives from the American Institute of Banking. Therefore, this associate of applied science degree parallels the skills, training and educational standards set by the AIB.

The financial institutions management degree curriculum focuses on business and banking in addition to some specific technical areas. Graduates of this program will be prepared to pursue many career paths in financial institutions management.

Requirements

Financial Institutions Management — A.A.S. Degree
1. Complete the following general degree requirements:
Written Communication 6
(Engl. 111 plus any 200-level written communications course or applied written communications course as approved by the head of the program in which the degree is earned.)
Oral Communication 3
Select a total of 6 credits from the following areas: humanities, social science, mathematics or natural science 6
(At least 3 credits shall be math or natural science at the 100 level or above.)
Subtotal 15
2. Complete the following major degree requirements:
ABUS 142 — Office Accounting I 2
ABUS 160 — Principles of Banking *or*
ABUS 161 — Foundations and Structures of Credit Unions 3
ABUS 165 — Consumer Lending 3
ABUS 179 — Fundamentals of Supervision 3
ABUS 181 — Law and Banking Applications 3
ABUS 224 — Money and Banking 3
ABUS 240 — Business Law 3
CAPS 150 — Computer Business Applications 3
Economics 3
OP 231 — Business Communications 3
Subtotal 32
3. Complete the following major specialty electives:
Select 12 credits from the following:
ABUS 166 — Residential Mortgage Lending 3
ABUS 167 — Branch Management 3
ABUS 223 — Real Estate Finance 3
ABUS 234 — Financial Counseling 3
ABUS 244 — Loan Officer Development 3
ABUS 261 — Analyzing Financial Statements 3
Subtotal 12
4. General Elective Credit 1
Degree Total 60

Fire Science

School of Career and Continuing Education
Service Industry Department

Certificate; Degree: A.A.S.
Minimum Requirements for Certificate — 30 credits; for Degree — 60-61 credits

The Fire Science Program gives students a fundamental working knowledge of the various aspects of fire prevention and protection in both urban and wildlife areas. It also serves as an in-service program for personnel already employed by fire protection agencies and enhances their opportunities for advancement. Associate degrees and certificate programs in municipal fire control and wildlands fire control are offered.

Requirements

Municipal Fire Control — A.A.S. Degree
1. Complete the following general degree requirements: *Credits:*
Written Communication 6
(Engl. 111 plus any 200-level written communications course or applied written communications course as approved by the head of the program in which the degree is earned.)
Oral Communication 3
Select a total of 6 credits from the following areas: humanities, social science, mathematics or natural science 6
(At least 3 credits shall be math or natural science at the 100 level or above.)
Subtotal 15

2. Complete the following major degree requirements:
FSCI 101 — Introduction to Fire Science 3
FSCI 105 — Fundamentals of Fire Protection 3
FSCI 107 — Fire Tactics and Strategy 3
FSCI 111 — Fire Company Organization and Management 3
FSCI 117 — Rescue Practices 3
FSCI 202 — Fire Hydraulics 3
FSCI 204 — Hazardous Materials 3
EMTT 103 — Emergency Trauma Training (ETT)
First Responder 3
or
EMTT 119 — Emergency Medical Technician I 4
Subtotal 24-25

3. Complete 6 credits from the following major specialty electives:
EMTT 102 — Emergency Medical Technician Refresher 1
EMTT 121 — Emergency Medical Technician II 2
FSCI 115 — Fire Apparatus and Equipment 3
FSCI 121 — Introduction to Fire Chemistry and Physics 3
FSCI 123 — Fire Investigation 3
FSCI 205 — Hazardous Materials II 3
FSCI 206 — Building Construction for Fire Protection 3
FSCI 208 — Fire Service Records and Reports 3
FSCI 212 — Related Codes and Ordinances 3
FSCI 214 — Fire Protection Equipment and Systems 3
Subtotal 6

4. Complete 15 general electives credits 15
Degree Total 60-61

Note: Major electives and general electives must be approved by the student's advisor.

Municipal Fire Control — Certificate
Suggested Course Sequence

Fall Semester	*Credits*
FSCI 101 — Introduction to Fire Science	3
FSCI 105 — Fundamentals of Fire Prevention	3
FSCI 107 — Fire Tactics and Strategy	3
EMTT 103 — Emergency Trauma Training (ETT) First Responder	3
or	
EMTT 119 — Emergency Medical Technician I	4
Major specialty electives	3
Subtotal	15-16
Spring Semester	
FSCI 111 — Fire Company Organization and Management	3
FSCI 117 — Rescue Practices	3
FSCI 202 — Fire Hydraulics	3
FSCI 204 — Hazardous Materials I	3
Major specialty electives	2-3
Subtotal	14-15
Certificate Total	30

Wildlands Fire Control — A.A.S. Degree

1. Complete the following general degree requirements:	*Credits:*
Written Communication	6
(Engl. 111 plus any 200-level written communications course or applied written communications course as approved by the head of the program in which the degree is earned.)	
Oral Communication	3
Select a total of 6 credits from the following areas: humanities, social science, mathematics or natural science	6
(At least 3 credits shall be math or natural science at the 100 level or above.)	
Subtotal	15

2. Complete the following major degree requirements:
EMTT 103 — Emergency Trauma Training (ETT) First Responder
or
EMTT 119 — Emergency Medical Technician I 4
FSCI 151 — Wildland Fire Control I 3
FSCI 153 — Fire Organization and Management 3
FSCI 155 — Fire Behavior I 3
FSCI 157 — Air Operations Management 3
FSCI 252 — Enforcement and Investigation 3
FSCI 254 — Wildland Fire Business Management 3
FSCI 262 — Wildland Fire Control II 3
Subtotal 24-25

3. Complete 6 credits from the following major elective courses:
EMTT 102 — Emergency Medical Technician Refresher 1
EMTT 121 — Emergency Medical Technician II 2
FSCI 161 — Fire Logistics Functions 3
FSCI 163 — Wildland Air Attack 3
FSCI 256 — Fire Planning and Multiple Use Management 3
FSCI 258 — Prescribed Burning and Fuels Management 3
FSCI 266 — Wildland Fire Environmental Considerations 3
Subtotal 6

4. Complete 15 general electives credits 15
Degree Total 60-61

Note: Major electives and general electives must be approved by the student's advisor.

Wildlands Fire Control — Certificate
Suggested Course Sequence

Fall Semester	*Credits*
EMTT 103 — Emergency Trauma Training (ETT) First Responder	3
or	
EMTT 119 — Emergency Medical Technician I	4
FSCI 151 — Wildfire Control I	3
FSCI 153 — Fire Organization and Management	3
FSCI 161 — Fire Logistics Functions	3
Major electives	3
Subtotal	14-15
Spring Semester	
FSCI 155 — Fire Behavior I	3
FSCI 157 — Air Operations Management	3
FSCI 252 — Enforcement and Investigation	3
FSCI 254 — Wildland Fire Business Management	3
Major electives	2-3
Certificate Total	30

Fisheries

School of Fisheries and Ocean Sciences
Program in Fisheries

Degrees: B.S., M.S.
Minimum Requirements for Degrees: B.S. — 130 credits; M.S. — 30 additional credits

The fisheries undergraduate curriculum program 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 undergraduate program is offered at Fairbanks only.

The geographic location of UAF is advantageous for the study of interior Alaska aquatic habitats. A number of subarctic streams and lakes are within easy reach. Main access to the marine environment from the Fairbanks campus is in Prince William Sound and Cook Inlet.

The Juneau Center for Fisheries and Ocean Science houses the UAF Fisheries Science Program in southeast Alaska.* JCFOS has well-equipped labs and a 42-foot research vessel. It is located near the Auke Bay National Marine Fisheries Laboratory. Faculty with JCFOS were associated with the University of Alaska Juneau (now the University of Alaska Southeast) prior to this year. Students matriculating at Juneau can also register for UAS courses.

Students from both locations 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.

* *Juneau students should also reference the University of Alaska Southeast catalog.*

Requirements

Fisheries — B.S. Degree

1. Complete the general university requirements including:

	Credits
English 111 and 213	6
Speech Communication (Sp. C. 131 or 141)	3
Social Science and Humanities (excluding social science and humanities courses in program requirements)	15

2. Complete the following degree and program (major) requirements:

A. Core Courses:

General (32 credits)	
A.L.R. 101 — Conservation of Natural Resources	3
Engl. 414 — Research Writing	3
Stat. 301 — Elementary Prob. and Stat.	3
Chem. 105, 106 — General Chemistry	8
*Math. 272, 273 — Intro. to Calculus for Life. Sci.	6
Econ. 235 — Natural Resource Econ	3
C.S. 201 — Computer Programming I	3
Geog. 205 — Elements of Physical Geography	3
Biology (24 credits)	
Biol. 105, 106 — Fundamentals in Biol. I and II	8
Biol. 271 — Principles of Ecology	4
Biol. 210 — Animal Physiology	4
Biol. 362 — Principles of Genetics	4
Biol. 423 — Ichthyology	4
Fisheries (12 credits)	
Biol. 473 — Limnology	3
or	
Biol. 328 — Biology of Marine Organisms	3
Fish. 429 — Intro. to Fisheries Science	3

Fish. 430 — Fisheries Management 3
Biol. 424 — Biol. of Freshwater Fish of Alaska 3

*or Math 200, 201, & 202 — Calculus

B. Electives:

Take one course from each of the following groups of courses:

Group 1 (3-5 credits)	*Credits*
Biol. 342 — Microbiology	4
Biol. 307 — Parasitology	3
Biol. 442 — Bacteriology and Immunology	5
Group 2 (3-5 credits)	
Biol. 222 — Biology of the Vertebrates	4
Biol. 205 — Vertebrate Anatomy	3
Biol. 317 — Comparative Anatomy of Vertebrates	5
Group 3 (3 credits)	
Biol. 472 — Communities and Ecosystems	3
Biol. 471 — Population Ecology	3
Biol. 328 — Biology of Marine Organisms *(if used here, cannot satisfy fisheries core course requirements)*	3
Biol. 477 — Ecology of Streams and Rivers	3
Group 4 (3-4 credits)	
Biol. 305 — Invertebrate Zoology	4
Biol. 406 — Entomology	4
Biol. 407 — Aquatic Entomology	3
Group 5 (3 credits)	
Biol. 480 — Water Pollution Biology	3
A.L.R. 370 — Introduction Watershed Management	3

C. Option — Complete the requirements for one of the following options:

Research Option: *Credits*

Choose 6-8 credits from the courses listed below:
Stat. 401 — Intro. to Exp. Design (4 credits)
Stat. 402 — Scientific Sampling (3 credits)
Chem. 212 — Intro. Quant. Analysis (4 credits)
Chem. 321-322 — Organic Chem. (3/3 credits)
Chem. 324 — Organic Lab. (3 credits)
C.S. 202 — Computer Programming II (3 credits)
Geos. 304 — Geomorphology (3 credits)
Phys. 103-104 — College Physics (4/4 credits)
In addition, any electives needed to bring total credits to 130.

Management Option:

1. Take one of the following: (3 credits)	*Credits*
ALR 400 — Natural Resources Policies	3
ALR 401 — Natural Resources Legislation	3
2. Take four courses from the following: (12 credits)	
GEOG 302 — Geography of Alaska	3
GEOG 402 — Man and Nature	3
**JB 101 — Intro. to Mass Communication	3
**JB 311 — Magazine Article Writing	3
ANTH 242 — Native Cultures of Alaska	3
PS 201 — Comp. Politics: Methods of Political Analysis	3
PS 263 — Alaska Native Politics	3
PS 211 — State and Local Government	3
PS 212 — Intro. to Public Administration	3
PS 302 — Congress and Public Policy	3
SOC 309 — Urban Sociology	3
BA 301 — Processes of Management	3
BA 307 — Personnel Managements	3
*ECON 438 — The Economics of Fisheries Management	3
3. Take one of the following: (2-3 credits)	
WLF. 303 — Wildlife Management Techniques	3
WLF. 417 — Wildlife Management - Forest and Tundra	2
WLF. 419 — Waterfowl and Wetlands Ecology and Management	3
In addition, any electives needed to bring total credit hours to 130.	
Minimum credits required	130

*Note prerequisite.
**Maximum of 3 credits may be used to satisfy the management option.

Bachelor of science candidates are strongly urged to obtain work experience in fisheries-related positions with public resource agencies or private firms. Faculty members can help students contact potential employers. Fisheries undergraduate students will be asked each fall to describe their work experience of the previous year.

Fisheries — M.S. Degree

For complete information on the graduate program in fisheries, see the UAF Graduate Catalog.

Foreign Languages

College of Liberal Arts
Department of Foreign Languages and Literatures

Degree: B.A.
Minimum Requirements for Degree: B.A. — 130 credits

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

The study of foreign languages and literatures liberates the student from the confines of one culture.

Requirements

Foreign Language — B.A. Degree
1. Complete the general university requirements.
2. Complete the B.A. degree requirements.
3. Complete the following program (major) requirements:

	Credits
I. Background-related Requirements	24
Option A Liberal Arts Option	
a. Ling. 101 — Nature of Language *or* Ling. 216 — Languages of the World	3
Hum. 201 — Unity in the Arts	3
Hum. 202 — Unity in the Sciences	3
Hum. 411 — Dimensions of Literature	3
b. 6 credits in literature courses other than those of the field of specialization	6
c. 6 credits from among the following:	
Phil. 201 — Introduction to Philosophy	3
Hist. 101, 102 — Western Civilization	3
Hist. 315 — Europe 1914-1945	3
Art 261 or 262 — History of World Art	3
Geog. 305 — Geography of Europe (except U.S.S.R.)	3
Geog. 402 — Man and Nature	3
Option B (Career-oriented Option)	
a. Ling. 101 The Nature of Language *or* Ling. 216 — Languages of the World	3
b. 21 credits in major-related courses in other disciplines, such as business, education, journalism, political science, etc. (to be specified by the advisor according to the student's career preferences)	21
II. Major Requirements (two languages required) First Language (French, German or Spanish) (above 100 level)	24

Complete the following courses:
201 — 3 credits 387 — 2 credits
202 — 3 credits 432 — 3 credits
288 — 2 credits 487 — 2 credits
301 — 3 credits 488 — 3 credits
303 — 3 credits
Second Language (French, German, Russian or Spanish) (above 100 level) 13
Complete the following courses:
201 — 3 credits 301 or 303 — 3 credits
202 — 3 credits 387 — 2 credits
288 — 2 credits
Second Language (Japanese) (above 100 level) 14
Complete the following courses:
201 — 4 credits 202 — 4 credits
301 — 3 credits 302 — 3 credits

Where appropriate, courses listed under I and II may be counted toward fulfillment of B.A. requirements listed under 2.

4. Minimum credits required 130

MINOR in Foreign Languages

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.

General Science

College of Natural Sciences
Department of Physics

Degrees: B.S., M.S.
Minimum Requirements for Degrees: B.S. — 130 credits; M.S. — 30 additional credits

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 borders between the older sciences provide excellent opportunity for research. An acquaintance with the fundamentals of all 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 disciplines.

Requirements

General Science — B.S. Degree
1. Complete the general university requirements.
2. Complete the following degree and program (major) requirements:

First Year

Fall Semester	*16 credits*
Engl. 111 — Methods of Written Comm.	3
Math. 107-108 — Elementary Functions and Trigonometry	5
Chem. 105 — General Chemistry or Phys. 103 — College Physics	4
Biol. 105 — Fundamentals of Biology	4

Spring Semester	*15 credits*
Speech Communication Elective	3
Math. 200 — Calculus	4
Chem. 106 — General Chemistry or Phys. 104 — College Physics	4
Biol. 106 — Fundamentals of Biology	4

Second Year

Fall Semester	*17 credits*
Phys. 103 — College Physics or Chem. 105 — General Chemistry	4
Econ. 201 — Principles of Economics I	3
Geos. 101 — The Dynamic Earth	4
Psy. 101 — Intro. to Psychology	3
Department elective	3

Spring Semester	*16 credits*
Phys. 104 — College Physics or Chem. 106 — General Chemistry	4
Geos. 112 — Historical Geology	4
Soc. 101 — Intro. to Sociology or Anth. 101 — Introduction to Anthropology	3
Electives	5

Third and Fourth Years

By the beginning of his/her junior year, each student in general science must decide upon his/her major field and, with the assistance of the person in charge of administering the curriculum in general science, make out a program for his third and fourth years of study.

Directions for making out the program:

1. Include the following courses:	*Credits*
Engl. 211 — Intermed. Exposition with Modes of Literature or Engl. 213 — Intermed. Exposition	3
Social Science and/or Humanities electives (3 credits must be Humanities)	6

2. A major may be elected in anthropology, biological sciences, chemistry, geosciences, mathematics, or physics. Courses to be used to meet major requirements must be approved in writing not later than the beginning of the junior year and a copy of the approval must be filed with the Office of Admissions and Records. Although the minimum number of credits required for a general science major is 20, many of the majors require specific courses which total more than 20 credits. Therefore, a general science student should contact the head of the major department as early as possible to determine major requirements.
3. The electives must include either two minors of at least 12 credits each above the foundation courses included in the General Science curriculum, or a second major. Minors may be selected in any of the major departments listed or in the fields of economics, education (minimum 24 credits), English, French, German, Russian, history, or political science.
4. All prerequisites of courses elected must be met.
5. One year of German or Russian is recommended.
6. Courses selected to complete the requirements in the social sciences must be chosen from the following: anthropology except archeology; sociology; economics; history; and political science.
7. Physics 211-212 may alternate for Physics 103-104 and Chem. 212 may alternate for Chem. 105-106.
8. A minimum of 130 credits is required.

General Science — M.S. Degree

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 a "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.

For complete information on the graduate program in general science, see the UAF Graduate Catalog.

Geography

College of Liberal Arts
Department of Geography

Degrees: B.A., B.S.
Minimum Requirements for Degrees: B.A. — 120 credits; B.S. — 120 credits

The department offers undergraduate courses and degrees in geography and in geography and 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 likenesses, differences, interdependence and significance. Geography serves as a bridge between the physical sciences and the social sciences. At UAF, geography is offered as: (a) part of a broad cultural background in a liberal arts curriculum; (b) part of a comprehensive program in biological and earth sciences; (c) background for studies in economics, history, political science, and other social sciences; (d) preparation for teaching geography, earth science, or social science in elementary or secondary schools; (e) technical training for professional geographic work in government, business or industry; (f) preparation for further graduate study in geography, regional planning and related disciplines. Students majoring in geography may elect such advanced work in this and other departments as will provide a concentration either in physical science or in social science.

Requirements

Geography — B.A. Degree
1. Complete the general university requirements and B.A. degree requirements.
2. Complete the following program (major) requirements:

A. Complete 33 credits in geography as follows:

Geog. 101 — Introductory Geography or Geog. 103 — World Economic Geography	3
Geog. 205 — Elements of Physical Geography	3
Geog. 339 — Advanced Physical Geography or Geog. 401 — Weather and Climate	3
Geog. 492 — Seminar	3
Select three of the following regional courses:	
Geog. 202 — Geography of the U.S. and Canada (3)	
Geog. 302 — Geography of Alaska (3)	
Geog. 305 — Geography of Europe (Except U.S.S.R.) (3)	
Geog. 306 — Geography of the Soviet Union (3)	
Geog. 311 — Geography of Asia (3)	
Geog. 327 — Cold Lands (3)	9
Select two of the following cultural courses:	
Geog. 402 — Man and Nature (3)	
Geog. 404 — Urban Geography (3)	
Geog. 405 — Political Geography (3)	6
Select one of the following technique courses:	
Geog. 309 — Cartography (3)	
Geog. 408 — Quantitative Research Techniques (3)	3
Geography elective	3

B. Approved electives to complete 120 credits.

Geography — B.S. Degree
1. Complete general university requirements and B.S. degree requirements, pages 25 and 26.

2. Complete the following program (major) requirements:
A. Complete 33 credits in geography as follows:
Geog. 101 — Introductory Geography or
Geog. 103 — World Economic Geography 3
Geog. 205 — Elements of Physical Geography 3
Geog. 309 — Cartography 3
Geog. 339 — Advanced Physical Geography 3
Geog. 401 — Weather and Climate 3
Geog. 402 — Man and Nature 3
Geog. 408 — Quantitative Research Techniques 3
Geog. 492 — Seminar 3
Select two of the following regional courses:
Geog. 202 — Geography of the U.S. and Canada (3)
Geog. 302 — Geography of Alaska (3)
Geog. 305 — Geography of Europe (Except U.S.S.R.) (3)
Geog. 306 — Geography of the Soviet Union (3)
Geog. 311 — Geography of Asia (3)
Geog. 327 — Cold Lands (3) 6
Geography elective 3

B. Approved electives to complete 120 credits.

MINOR in Geography:
A minor in geography requires 15 credits in geography including Geography 101 or 103 and 205.

Geological Engineering

School of Mineral Engineering
Department of Mining and Geological Engineering

Degrees: B.S., M.S.
Minimum Requirements for Degree: B.S. — 131 credits plus 6 credits field course; M.S. — 30-33 additional credits.

Geological engineering is a branch of engineering dealing with the application of geology. Geological engineers work with the environment in the true sense of the word. Properties of earth materials exploration activities, geophysical and geochemical prospecting, site investigations and engineering geology are all phases of geological engineering.

Candidates for the bachelor of science degree in geological engineering will be required to take a comprehensive exam in their general field (completion of the State of Alaska Engineering-in-Training examination will satisfy the requirement). The State of Alaska Engineer-in-Training examination is a first step toward registration as professional engineers.

Graduates of the program are employed by industry, consulting companies, and government agencies.

Students may initiate their geological engineering program in Anchorage and transfer to Fairbanks upon completion of the freshman and sophomore years. Such students should be in communication with a faculty member of the Department of Mining and Geological Engineering, UAF.

Requirements

Geological Engineering — B.S. Degree
1. Complete the general university requirements.
2. Complete the following degree and program (major) requirements:

First Year

Fall Semester — *17 Credits*
GE 101 — Introduction to Geological Engineering 1
ENGL 111 — Methods of Written Communications 3
MATH 200 — Calculus 4
CHEM 105 — General Chemistry 4
ES 101 — Descriptive Geometry for Engineers 2
Social Science or Humanities** 3

Spring Semester — *17 Credits*
Speech Elective 3
MATH 201 — Calculus 4
GE/GEOS 261 — General Geology for Engineers 3
CHEM 106 — General Chemistry 4
Social Science or Humanities** 3

Second Year

Fall Semester — *18 Credits*
MATH 202 — Calculus 4
GEOS 213 — Mineralogy 4
PHYS 211 — General Physics 4
ENGL 211 *or* 213 — Intermediate Exposition 3
MIN 202 — Mine Surveying 3

Spring Semester — *17 Credits*
ES 201 — Computer Techniques 3
PHYS 212 — General Physics 4
ES 208 — Mechanics 4
GEOS 214 — Petrology and Petrography 3
MATH 302 — Differential Equations 3

Third Year

Fall Semester — *16 Credits*
ES 331 — Mechanics of Materials 3
ES 341 — Fluid Mechanics 4
GE 365 — Geological Engineering I 3
GE 375 — Terrain Analysis 3
GEOS 321 — Sedimentology 3

Spring Semester — *16 Credits*
GEOS 314 — Structural Geology 4
GE 372 — Rock Engineering 3
MIN 370 — Rock Mechanics* *or*
CE 326 — Intro to Geological Engineering 3-4
STAT 301 — Elementary Probability & Statistics 3
Social Science or Humanities Elective** 3

Summer — *Credits*
GEOS 351 — Field Geology 6

Fourth Year

Fall Semester — *15 Credits*
GE 471 — Remote Sensing for Engineering 3
Social Sciences or Humanities Elective** 7
Technical Elective*** 5

Spring Semester — *15 Credits*
GE 405 — Exploration Geophysics 4
GE 420 — Subsurface Hydrology 3
MIN 408 — Mineral Valuation and Economics 2
GE 480 — Geological Engineering II 2
Technical Elective*** 3

*Either MIN 370 or CE 326 is required. Selection is dependent upon the student's interest and professional orientation.
**Of the 16 social science/humanities credits, at least 6 must be at/or above the 200 level or advanced courses in a 100 level sequence. Sufficient depth in at least one of the areas must be demonstrated by evidence of a sequence of courses. This sequence must be approved by the students' departmental advisor.
***Technical electives are dependent upon professional interest and selected by the student in conference with his or her advisor and approved by the department. Technical electives are selected from a list of approved technical electives from the Geological Engineering and other programs.

Geological Engineering — M.S. Degree

The graduate program allows for awarding the master of science degree in geological engineering. The degree consists of a core program and electives in either geotechnical engineering or exploration engineering. University policy pertaining to graduate study leading to a master's degree apply as approved by the student's adviser and the Department of Mining and Geological Engineering faculty.

For complete information on the graduate program in geological engineering, see the UAF Graduate Catalog.

Geology

College of Natural Sciences
Department of Geology and Geophysics

Degrees: B.S., M.S., Ph.D.
Minimum Requirements for Degrees: B.S. — 130-136 credits including summer field courses; M.S. — 30 additional credits, including thesis; Ph.D. (open)

Graduates in geology will have broad backgrounds in the earth sciences with firm foundations in mathematics, physics, and chemistry. There are many options available in the geological sciences, and the suggested curricula are intended to be flexible enough to allow the students to pursue their own emphases in the junior and senior years. The bachelor's degree should prepare one for positions with industry or government or for graduate studies. Graduate programs are tailored around minimal core course requirements (M.S. only) to the special research and study interest of the student. In addition to courses listed under the geology and geophysics program, students should check the course listings under the School of Mineral Engineering and the Marine Science program.

All serious students of the geological sciences at UAF should note that in addition to the facilities available directly through the instructional program, there are active research laboratories in the fields of seismology, volcanology, paleomagnetism, isotope geochronology, glaciology and ice physics which are housed in the Geophysical Institute (see also Geophysical Institute under Research). These laboratories can frequently provide topics for M.S. and Ph.D. theses. Other laboratories are also available in other divisions on campus, as listed under Research. There are about 40 professional geoscientists in residence on campus, and graduate students normally participate in the ongoing research of these professionals. Similar possibilities exist for the motivated undergraduate.

Requirements

Geology — B.S. Degree

1. Complete the general university requirements.
2. Complete the following degree and program (major) requirements:

	Credits
Engl. 111 — Methods of Written Communication	3
Engl. 211 — Intermed. Expos. with Modes of Literature or Engl. 213 — Intermed. Exposition	3
Speech Communications Elective	3
Social Science (minimum of 3 credits) and Humanities (minimum of 3 credits), exclusive of 9 credit communications requirement	15
Mathematics (Select appropriate series)	11 or 15
For Geology options: MATH 200-201-Calculus (8), and STAT 400-Statistics (3)	
For Geophysics Option: MATH 200, 201, 202-Calculus (11), MATH 302-Differential Equations (3)	
PHYS 211-212 — General Physics (PHYS 103-104 may be taken for General Geology Option)	8
CHEM 105-106 — General Chemistry	8
Computer literacy equivalent to BA 100 or CS 201	0-3

3. For General Geology, Economic Geology and Petroleum Geology options, complete the following requirements:

Core Courses:	Credits
GEOS 101 — The Dynamic Earth	4
GEOS 112 — Historical Geology	4
GEOS 213 — Mineralogy	4
GEOS 214 — Petrology and Petrography	4
GEOS 304 — Geomorphology	3
GEOS 314 — Structural Geology	3
GEOS 322 — Stratigraphy and Sedimentation	4
GEOS 351 — Field Geology	6
GEOS 401 — Invertebrate Paleontology	4
GEOS 430 — Statistics and Data Analysis	3

General Geology Option:	Credits
Complete at least 5 credits from the courses listed below:	
GEOS 408 — Photogeology (2)	
GEOS 417 — Introduction to Geochemistry (3)	
GEOS 418 — Basic Geophysics (3)	5 or 6
Electives (professional and general) to bring total to 126	

Economic Geology Option:	Credits
GEOS 304 — Geomorphology	3
GEOS 432 — Geology of Mineral Resources Lecture or GEOS 432L — Geology of Mineral Resources Laboratory	2 or 3
One of the following	2 or 3
MIN 202 — Mine Surveying (3 credits)	
MPR 304 — Intro. to Metallurgy (3 credits)	
MPR 313 — Intro. to Mineral Preparation (3 credits)	
MIN 407 — Mineral Industry and the Environment (2 credits)	
MIN 408 — Mineral Valuation and Economics (3 credits)	
GE 365 — Geological Engineering I (3 credits)	
One of the following:	3 or 4
GEOS 418 — Basic Geophysics (3 credits)	
GEOS 410 — Potential Methods in Geophysics (2 credits)	
GEOS 412 — Electrical Methods in Geophysics (2 credits)	
Electives (professional and general) to bring total to 136	

Petroleum Geology Option:	Credits
PETE 205 — Intro. to Petroleum Drilling and Production	3
PETE 302 — Well Logging	3
GEOS 411 — Seismic Exploration	3
GEOS 410 — Potential Methods in Geophysics or GEOS 412 — Electrical Methods in Geophysics	2
GEOS 470 — Petroleum Geology	3
Electives (professional & general) to bring total to 130	

4. For the Geophysics Option, complete the following requirements:

	Credits
GEOS 101 — The Dynamic Earth	4
GEOS 213 — Mineralogy	4
GEOS 418 — Basic Geophysics	3
GEOS 419 — Continuum Mechanics	4
MATH 211 — Linear Algebra and the Computer	1
MATH 421 — Applied Analysis I	4
MATH 422 — Applied Analysis II	4
PHYS 213 — Elements of Modern Physics	3
PHYS 311 — Mechanics I	4
PHYS 331 — Electricity and Magnetism	3
PHYS 332 — Electricity and Magnetism	3
Choose a minimum of 6 credits from the following courses:	
GEOS 112 — Historical Geology	4
GEOS 214 — Petrology and Petrography*	3
GEOS 304 — Geomorphology	4
GEOS 314 — Structural Geology*	4
GEOS 321 — Sedimentology	3
GEOS 322 — Stratigraphic Principles	4
*Strongly recommended for students interested in exploration geophysics.	
Choose a minimum of 6 credits from the following from the following courses:	
GEOS 417 — Geochemistry	3
GEOS 420 — Elements of Seismology	3
GEOS 430 — Statistics and Data Analysis	3
ES 341 — Fluid Mechanics	4

Complete either Plan A or Plan B

Plan A — Exploration Geophysics:	
Complete the following requirements:	
GEOS 410 — Potential Methods in Geophysics	2
GEOS 411 — Seismic Exploration	3
GEOS 412 — Electrical Methods in Geophysics	2
GEOS 451 — Field Geophysics	2
Complete at least 6 credits from the following or from courses listed as options above that were not used:	
GEOS 351 — Field Geology	4
GEOS 414 — Glaciology	3
GEOS 422 — Remote Sensing	3
GEOS 470 — Petroleum Geology	4
GE 365 — Geological Engineering	3
GE 372 — Rock Engineering	3
PETE 302 — Formation Well Logging	2
PHYS 312 — Mechanics II	4
EE 341 — Computer Organization	4

Plan B — General Geophysics	
Complete at least one course from the following:	
GEOS 410 — Potential Methods in Geophysics	2
GEOS 411 — Seismic Exploration	3
GEOS 412 — Electrical Methods in Geophysics	2
Complete at least 12 credits from the following or from courses listed as options above that were not used:	
GEOS 414 — Glaciology	3
GEOS 422 — Remote Sensing	3
GE 420 — Subsurface Hydrology	3
PHYS 312 — Mechanics II	4
PHYS 313 — Thermodynamics	4
EE 341 — Computer Organization	4
ME 441 — Heat and Mass Transfer	3
MPR 418 — Emission Spectroscopy, X-ray Spectroscopy, Atomic Absorption	3
Electives (professional or general) to bring total to 130	

MINOR in Geology:

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

Geology — M.S., M.A.T., or Ph.D. Degrees

For complete information on the graduate programs in geology, see the UAF Graduate Catalog.

Geophysics

College of Natural Sciences
Department of Geology and Geophysics

Degrees: M.S., Ph.D.

Minimum Requirements for Degrees: M.S. — 36 credits (beyond a bachelor's degree), Ph.D. (open)

For complete information on the graduate programs in geophysics, see the UAF Graduate Catalog.

Guidance and Counseling

Rural College
Department of Behavioral Sciences and Human Services

Degree: M.Ed.
Minimum Requirements for Degree: M.Ed. 42 additional credits

For complete information on the graduate program in Guidance and Counseling, see the UAF Graduate Catalog.

Health Sciences

Preprofessional Curricula

Professional schools of medicine and dentistry as well as many of the professional schools in paramedical fields (e.g. medical technology, physical therapy) require one to four years of collegiate work before a student will be admitted. These years of preliminary academic work may be taken at UAF, where the students follow a sequence of courses planned to meet the requirements of the particular professional field in which they are interested. Students interested in health professions should contact the health science preprofessional adviser before registering.

Most premedical students plan on four preliminary years. The students are encouraged to develop their major area of interest, be it either in natural or social sciences or in the humanities. In preparation for medical school the student must gain a thorough understanding of the modern concepts in biology, chemistry and physics. Students are encouraged to include chemistry and either physics or biology in their freshman course of study. Usually students at UAF follow 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. Premedical students who are accepted in medical school prior to finishing their degree and who wish to receive a bachelor's degree from UAF may obtain from the health sciences preprofessional adviser, a description of the requirements which must be completed.

History

College of Liberal Arts
Department of History

Degrees: B.A., M.A.T.
Minimum Requirements for Degrees: B.A. — 130 credits; M.A.T. — 36 additional credits

The history department seeks to make the student aware of the human cultural heritage, the great problems that have faced humans throughout history and how we have sought to solve them.

The department also trains the student in applying the historical method which offers analysis based on the dimension of time. Discussion, focused on concrete, specific events, persons and judgments explains why things are as they are. Students will learn effective historical research and writing.

Through the study of history, students may prepare for careers in public service agencies; as members of management teams, particularly in the area of policy analysis; for careers in teaching, or for advanced work in history and other social sciences.

Requirements

History — B.A. Degree
1. Complete general university and B.A. degree requirements.
2. Complete the following program (major) requirements:

Complete any four of the following:	Credits
Hist. 101-102 — Western Civilization	6
Hist. 121-122 — East Asian Civilization	6
Hist. 131-132 — History of the U.S.	6
Complete 21 upper-division credits in history, including:	
Hist. 475-476 — Historiography and Intro. to Historical Method	6
3. Minimum credits required	130

MINOR in History:
A minor in history requires the completion of 18 credits in history, six of which must be at the 300 level or above.

History — M.A.T. Degree

For complete information on the graduate program in history, see the UAF Graduate Catalog.

Humanities

College of Liberal Arts
Department of Philosophy and Humanities

Degree: B.A.
Minimum Requirements for Degree: 130 credits

One main objective of the humanities program is to enable the student to go beyond specialization and achieve integration of knowledge. Others are to deepen an appreciation of all the arts, to develop critical thinking, and to heighten an awareness of self and role in society.

The humanities program is set up in such a way as to offer a solid second major for many bachelor of arts and bachelor of science degree candidates. It aims at students from virtually all fields of specialization.

Requirements

Humanities — B.A. Degree
1. Complete the general university requirements and B.A. degree requirements.
2. Complete two years at the college level in a non-English language.
3. Complete the following program (major) requirements:

Prerequisites:	Credits
Hist. 101-102 — Western Civilization	6
Ling. 101 — The Nature of Language or Ling. 216 — Languages of the World	3
Phil. 201 — Introduction of Philosophy or Phil 202 — Introduction to Eastern Philosophy	3
Complete the following core courses:	
Hum. 201 — Unity in the Arts	3
Hum. 202 — Unity in the Sciences	3
Hum. 329 — The Modern Media	3
Hum. 332 — Varieties of Visual Expression	3
Hum. 342 — Synthesis in Musical Expression	3
Hum. 411 — Dimensions of Literature	3
Phil. 481 — Philosophy of Science	3
Hum. 492 — Senior Seminar	3
Electives:	*21 credits*

Courses chosen from the three major areas: arts, natural sciences, social sciences; three courses to be taken in one of these areas, and two in each of the remaining ones, totaling 21 credits. A list of recommended courses, drawn up and periodically updated by the Humanities Standing Committee after consultation with all departments in all colleges that wish to cooperate, will assist the student in making the choice of electives.

4. Minimum credits required 130

MINOR in Humanities:

Prerequisites:	Credits
Hist. 101-102 — Western Civilization	6
Core Courses:	
Hum. 201 — Unity in the Arts	3
Hum. 202 — Unity in the Sciences	3
Upper-division Humanities electives	12

Human Services

Rural College
Department of Behavioral Sciences and Human Services

Degree: B.A.*
Minimum Requirements for Degree: B.A. — 121 credits

The B.A. in human services was developed in response to a need for a program at the bachelor's level which prepares students to function as counselors and social service workers in rural areas. Agencies seeking middle-level, baccalaureate professionals will provide career placements. Students in this program gain knowledge about various

agencies in the state that address social service needs and are trained in generic skills such as agency administration, counseling, and the usual content areas which are customarily addressed by such agencies (e.g., alcoholism and drug abuse, child and youth care, and health problems). Students will become familiar with cross-cultural issues that influence human service needs and are taught to integrate that knowledge with human service planning, delivery and evaluation of services.

The human services program at the University of Alaska Fairbanks is interdisciplinary in its approach, cross-cultural in its content and rural in its orientation. The program is offered at the Fairbanks, Chukchi and Northwest campuses.

*** At the present time, no students are being accepted into the Human Services program.**

Requirements

Human Services — B.A. Degree
1. Complete the general university requirements and B.A. degree requirements.
2. Complete the following integrated major-minor requirements:

Behavioral sciences core	24
HMSV 201 — Introduction to Human Services	3
Psy./Soc. 250 — Introductory Statistics for Behavioral Sciences	3
Soc. 301 — Rural Sociology	3
Psy./Soc. 473 — Social Science Research Methods	3
Psy. 210 — Cross-Cultural Psychology	3
Psy. 345 — Abnormal Psychology or Soc. 335 — Sociology of Deviant Behavior	3
Soc. 408 — American Minority Groups	3
Psy. 101 — Introduction to Psychology	3
Departmental core	15
(These courses also may be applied to fill general distribution requirements.)	
Soc. 101 — Introduction to Sociology	3
Psy. 240 — Developmental Psychology in Cross-Cultural Perspective	3
Psy. 304 — Personality	3
Psy. 380 — Human Behavior in the Arctic	3
Anth. 242 — Native Cultures of Alaska	3
Human Services	18
HMSV 210 — Crisis Intervention	3
HMSV 255 — Foundations of Counseling I	3
HMSV 356 — Foundations of Counseling II	3
HMSV 230 — Alcoholism: Theories of Etiology	3
HMSV 330 — Alcoholism: Treatment and Prevention	3
HMSV 360 — The Helping Role in Child Abuse and Neglect	3
HMSV 410 — Management of Human Services Programs	3
HMSV 415 — Group Counseling	3
HMSV 488 — Practicum in Human Services	6
*HMSV/Psy. 445 — Community Psychology	3
*Psy./Soc. 370 — Drugs and Drug Dependence	3
*Soc. 310 — Sociology of Later Life	3
*Soc. 242 — The Family: A Cross-Cultural Perspective	3
R.D. 325 — Community Organization and Development Strategies	3
Minimum Credits Required for Degree	121

*These courses, when not applied towards the major, may be applied to fill distribution requirements.

MINOR in Human Services:
A minor in human services requires the satisfactory completion of 15 credits of approved human services courses including HMSV 201 and 210.

Interdisciplinary Studies

Degrees: B.A., B.S., M.A., M.S., Ph.D.
Minimum Requirements for Degrees: B.A. — 130 credits; B.S. — 130 credits; M.A. and M.S. — 30 or more credits; Ph.D. — open

Undergraduate —
The exceptional student with well-defined goals which do not fit into the established bachelor's program of the university should have an opportunity to achieve baccalaureate recognition for carrying out an approved interdisciplinary program which approximates the requirements for a baccalaureate degree in an established discipline. For this purpose the bachelor of arts or bachelor of science degree in interdisciplinary studies is offered.

Upon completion of 15 credits at UAF and at least 60 credits prior to graduation, a student may submit to the vice chancellor for Academic Affairs, an interdisciplinary curriculum leading to a B.A. or B.S. degree in interdisciplinary studies. The proposed curriculum must differ significantly from established degree programs at UAF and will require evidence that the necessary facilities and faculty are available to ensure an approximation of a normal bachelor's degree. All general requirements for the B.A. or B.S. degree must be met.

The vice chancellor will appoint to review the proposal a committee of at least three faculty members familiar with the interdisciplinary subject. If the curriculum is approved by the vice chancellor, he/she will, in consultation with the student, appoint an advisory committee of at least three faculty members to assist the student in planning and carrying out his program. The degree title will be chosen by the advisory committee in concert with the student and with the approval of the vice chancellor. Changes within the approved curriculum would be made only with the approval of this advisory committee.

Graduate —
Interdisciplinary proposals for graduate degrees must be submitted to the Director of Graduate Programs who will coordinate the review process similar to that described above for undergraduate proposals.

For complete information on interdisciplinary graduate programs, see the UAF Graduate Catalog.

Journalism and Broadcasting

College of Liberal Arts
Department of Journalism and Broadcasting

Degree: B.A.
Minimum Requirements for Degree: 130 credits

The curriculum in Journalism and Broadcasting offers a balance of professional and theory courses for majors and non-majors. Majors are able to take a variety of skills and theory courses while acquiring a strong liberal arts background. Non-majors, including those minoring in Journalism and Broadcasting, may choose from a wide selection of courses to meet their needs.

Besides gaining a solid academic background in the classroom, students get practical experience by working with media on and off campus. On campus, these include public television and public radio stations and a student-owned FM-stereo station. Print journalists work on the campus newspaper and on Alaska Today magazine. Off campus, students may choose from a variety of radio and television stations. Print journalists work at the Fairbanks Daily News-Miner.

Students in the department also have access to the department's state-of-the-art laboratory facilities. These include a computerized newswriting lab, typography lab, audio production lab, video editing lab and two photography labs.

The department and its two sequences, News-Editorial and Broadcast, are fully accredited by the Accrediting Council on Education in Journalism and Mass Communications.

Requirements

Journalism — B.A. Degree
1. Complete the general university requirements and B.A. degree requirements.
2. Complete the following program (major) requirements:

A. Complete the following courses in journalism:

	16 Credits
J-B 101 — Introduction to Mass Communications or J-B 102 — Broadcasting and Society	3
J-B 301 — Basic Newsgathering and Processing	4
J-B 320 — Journalism in Perspective	3
J-B 400 — Media Practicum	3
J-B 413 — Mass Media Law and Regulations	3

B. Complete one of the following sequences:

News-Editorial	*18 Credits*
J-B 444 — Advanced Newsgathering and Processing	4
One of the following:	
J-B 204 — Basic Photojournalism	3
J-B 215 — Audio Production	3
J-B 316 — Television Production	3
Four of the following:	
J-B 204 — Basic Photojournalism	3
J-B 240 — International Communications	3
J-B 303 — Intermediate Photography	3
J-B 311 — Magazine Article Writing	3
J-B 323 — Magazine Editing	3
J-B 324 — Typography and Publication Design	3
J-B 340 — Approaches to the Study of Mass Communication	3
*J-B 326 — Principles of Advertising	3
J-B 402 — Advanced Photography	3

J-B 411 — Advanced Writing for Publication 3
J-B 424 — Magazine Production 3
J-B 433 — Public Relations 3
J-B 492 — Seminar ..... 2 or 3

**Broadcast — 18 Credits*
J-B 215 — Audio Production 3
J-B 316 — Television Production 3

Four of the following:
J-B 204 — Basic Photojournalism 3
J-B 240 — International Communications 3
J-B 317 — Broadcast Journalism 3
*J-B 326 — Principles of Advertising 3
J-B 340 — Approaches to the Study of Mass Communication 3
J-B 372 — Instructional Television 3
J-B 407 — Programming and Production 3
J-B 415 — News/Documentary Television Production 3
J-B 416 — Advanced Broadcast Production 3
J-B 433 — Public Relations 3
J-B 492 — Seminar ..... 2 or 3

C. Complete at least 3 credits in each of the following areas:
Economics — Sociology
Political Science — History
Psychology

D. Although not required, it is strongly recommended that every journalism student study another language, both to help gain a better perspective of English and to better comprehend the changing world.

E. To assure the journalist of a broad liberal arts education, no more than 33 hours in journalism and broadcasting courses may be included in the 130 hours required for the B.A. degree.

3. Minimum credits required 130

*Cross-listed with B.A. 326, Principles of Advertising.
**Note: It should be understood that this broadcast option is primarily a news and production curriculum and is not intended as a dramatic or performing arts option.

MINOR in Journalism and Broadcasting:
Complete at least 16 credits of approved journalism and/or broadcasting courses, including the following:

Credits
J-B 101 — Introduction to Mass Communications
or J-B 102 — Broadcasting and Society 3
J-B 301 — Basic Newsgathering and Processing 4

Justice

College of Liberal Arts
Department of Political Science

Degree: B.A.
Minimum Requirements for Degree: B.A. — 130 credits

It has been said that the quality of a nation's civilization can be largely measured by the methods it uses to enforce its criminal law.

We in the United States deal with our criminals through a complex maze of organizations commonly referred to as the criminal justice system. This system is composed of police, courts, corrections and a multitude of supportive professions which are more or less actively engaged in dealing with criminals within the guidelines of our federal and state constitutions.

Only through an active educational effort by criminal justice personnel and students planning to enter the profession can we hope to attain the high degree of professionalization so necessary to create and maintain a criminal justice system which will mirror our otherwise advanced civilization.

Requirements

Justice — B.A. Degree
1. Complete the general university requirements and general requirements for the B.A. degree.
Electives chosen to fulfill the general requirements for the B.A. degree must be approved in advance by the director of the justice program.
2. Complete the following program (major) requirements:

Credits
Justice Core Course Requirements 21
Just. 110 — Introduction to Justice 3
Just. 221 — Justice Organization and Management 3
Just. 250 — Development of Law 3
Just. 251 — Criminology 3
Just. 330 — Justice and Society 3
Just. 451 — Research, Planning and Policy Analysis 3
Just. 460 — Justice Processes 3

Justice Emphasis Area Requirements:
15 credits in justice courses of which at least 12 credits must be upper division. Possible special emphasis areas might include:
Justice Administration — Security Administration
Corrections — General Justice
Legal Studies

3. Minimum credits required 130

MINOR in Justice:
Complete 18 credits in justice, including Just. 110, 9 of which must be upper division.

Justice

School of Career and Continuing Education
Service Industry Department

Degree: A.A.S.
Minimum Requirements for Degree: 60 credits

This degree program is presently suspended.

Linguistics

College of Liberal Arts
Department of Linguistics

Degree: B.A.
Minimum Requirements for Degree: B.A. — 130 credits

Linguistics is the scientific study of language and covers a variety of subjects from theories of grammar and how we produce language to applications of linguistic knowledge in areas such as language teaching. The Linguistics Program offers undergraduate courses and seeks to give an overview of the discipline to make students aware of the many aspects of that uniquely human phenomenon, language.

Requirements

Linguistics — B.A. Degree
1. Complete the general university requirements.
2. Complete the B.A. degree requirements.
3. Complete the following program (major) requirements:

Credits
A. Background-related Requirements 15-18
Four semesters (or equivalent) of one foreign or Native language and two semesters of a second.
(It is recommended that at least one of the languages be other than an Indo-European language.) 12-16
Ling. 101 — Nature of Language ~~or Ling. 216 — Languages of the World~~ 3

B. Major requirements 30
Complete the following Linguistics courses:
Ling. 318 — Intro. to Phonetics and Phonology 3
Ling. 320 — Intro. to Syntactic Theory 3
Ling. 350 — Historical Linguistics 3

Complete 7 of the following:
Ling. 410 — Second Language Teaching 3
Ling. 482 — Topics in Linguistics 3
(can be taken twice)
Ling. 216 — Languages of the World 3
Ling./Ed. 303 — Language and Literacy Development 3
Ling. 450 — Language Policy and Planning 3
ANL 215 — Alaska Native Languages 3
ANL 216 — Alaska Native Languages 3
ANS 320 — Language and Cultures 3
Engl. 318 — Modern English Grammar 3
Engl. 462 — Applied English Linguistics 3
Engl. 472 — History of the English Language 3
Sp.C. 320 — Communication and Language 3

Where appropriate, courses listed under A may be counted toward fulfillment of B.A. requirements listed under 2.

4. Minimum credits required 130

MINOR in Linguistics:
A minor in linguistics requires 12 credits in linguistics.

Marine Biology

School of Fisheries and Ocean Sciences
Graduate Program in Marine Sciences and Limnology

Degrees: M.S.
Minimum Requirements for Degree: 30 credits (beyond a bachelor's degree)

The graduate curriculum in marine biology, offered by the Department of Marine Sciences and Limnology, focuses on the organisms, while biological oceanography focuses on how biological processes influence and are influenced by the ocean environment.

Graduate students are afforded excellent opportunities for laboratory and field research through the Institute of Marine Science. Laboratory facilities are available at Fairbanks, the Seward Marine Center, the Juneau Center for Fisheries and Ocean Science, the Fishery Industrial Technology Center at Kodiak, and at a number of coastal field sites. Opportunities for field work are available on the R/V *Alpha Helix*, which operates along the Alaskan Coast and in the Bering Sea, on the R/V *Little Dipper*, which operates in Resurrection Bay, and on the R/V *Maybeso*, which operates in Southeast Alaska.

Students are admitted to the Graduate Program in Marine Sciences and Limnology on the basis of their ability and the capability of the program to meet their particular interests and needs. Requests for admission are considered continuously and each application is reviewed by the department faculty. Stipends for financial support are awarded competitively. Limited fellowship support is available. Most students are supported on research projects that relate directly to their degree research.

For complete information on the graduate program in marine biology, see the UAF Graduate Catalog.

Mathematics

College of Liberal Arts
Department of Mathematics

Degrees: B.A., B.S., M.A.T., M.S., Ph.D.
Minimum Requirements for Degrees: B.A. — 120 credits; B.S. — 120 credits; M.A.T. — 36 additional credits; M.S. — 30-35 additional credits.

The number of new fields in which professional mathematicians find employment grows continually. A variety of programs are offered by the Department of Mathematical Sciences for students majoring in mathematics. Options exist for those who are planning careers in industry, government, or education. The Department of Mathematical Sciences also offers degree programs in statistics and computer science which are described elsewhere in this catalog.

In addition to the major programs, the department provides a number of service courses in support of other programs within the university. Current and detailed information on mathematics degrees and course offerings is available from the department.

Requirements

In addition to meeting all the general requirements for the specific degree, certain mathematics courses are required of all mathematics majors. (At least 12 approved mathematics credits at the 300 level or above must be taken while in residence on the Fairbanks campus.) All electives must be approved by the department. (All mathematics majors — including double majors — must have an adviser from the Department of Mathematical Sciences.) Students preparing to teach mathematics in secondary schools should contact the Department of Education for a list of mathematics and education courses necessary to obtain an Alaskan teaching certificate.

Mathematics — B.A. or B.S. Degree
1. Complete the general university requirements and requirements for a B.A. or B.S. degree.
2. Complete the following program (major) requirements:
Complete the following courses:

Math. 200, 201, 202 — Calculus sequence	12
Math. 210 — Calculus and the Computer	1
Math. 211 — Linear Algebra and the Computer	1
Math. 215 — Intro. to Mathematical Proofs	2
Math. 314 — Linear Algebra	3
Math. 308 — Abstract Algebra	3
Math. 401 — Advanced Calculus	3
Math. 492 — Senior Seminar	1
TOTAL	26

Complete an elective package in the Mathematical Sciences consisting of at least 18 credits. This package must be approved by a Mathematical Sciences adviser and must include at least 12 credits at the 300-level or above. Students who are obtaining a single B.S. or B.A. with mathematics as a second major may substitute up to 9 credits of approved courses with strong mathematical content for Mathematical Sciences electives.

3. Minimum credits required 120

The following sample elective packages are suggested for students with interests in the indicated areas of emphasis.

A. Pure Math

Math. 305 — Geometry	3
Math. 307 — Discrete Mathematical Structures	3
Math. 402 — Advanced Calculus	3
Math. 404 — Topology	3
Approved Math elective	6
TOTAL	18

B. Applied Math

Math. 302 — Differential Equations	3
Math. 421 — Applied Analysis I	4
Math. 422 — Applied Analysis II	4
Math. 460 — Mathematical Modeling	3
Two courses chosen from Math 307, 402, 310 and Stat. 301	6
TOTAL	20

C. Secondary Education

Stat. 301 — Elementary Probability and Statistics or Stat. 400 — Statistics	3
Math. 305 — Geometry	3
C.S. 201 — Computer Programming I	3
Math. 306 — History and Philosophy of Mathematics	3
Approved Math elective	6
TOTAL	18

D. Statistics Emphasis

Math. 371 — Probability	3
Math. 408 — Mathematical Statistics	3
Math. 460 — Mathematical Modeling	3
Stat. 301 — Elementary Probability and Statistics or Stat. 400 — Statistics	3
Stat. 401 — Experimental Design & Regression	3
Approved elective	3
TOTAL	18

MINOR in Mathematics:
A minor in Mathematics requires completion of Math 200-201-202, 210, 211 in addition to six departmentally approved credits at the-300 level or above.

Mathematics — M.S., M.A.T. or Ph.D. Degree

For complete information on the graduate programs in mathematics, see the UAF Graduate Catalog.

Mechanical Engineering

School of Engineering
Department of Mechanical Engineering

Degrees: B.S., M.S.
Minimum Requirements for Degrees: B.S. — 130 credits; M.S. — 30 additional credits

Mechanical engineers conceive, plan, design and direct the manufacturing, distribution and operation of a wide variety of devices, machines and systems for energy conversion, environmental control, materials processing, transportation, materials handling and other purposes. Mechanical engineers are engaged in creative design, applied research, development and management. A degree in mechanical engineering also frequently forms the base for entering law, medical, or business school, as well as for graduate work in engineering.

Because engineering is based on mathematics, chemistry and physics, students are introduced to the basic principles in these areas during their first two years of study. The third year encompasses courses in the engineering science — extensions to the basic sciences forming the foundation to engineering synthesis and design. Senior year courses focus on mechanical engineering design. The design project course draws on much of the student's previous learning through a simulated industrial design project. Throughout the four-year program, courses

in communication, humanities and social sciences are required because mechanical engineers must be able to communicate effectively in written, oral, and graphical form.

Students in mechanical engineering may elect to complete an emphasis in petroleum engineering consisting of 12 credit hours. Six of these credit hours can be used to fulfill the elective credit requirement in the mechanical engineering curriculum.

Because of the unique location of the University of Alaska Fairbanks, special emphasis is placed on cold regions engineering problems. This fact is highlighted in the mechanical engineering program by the technical elective, arctic engineering.

Candidates for the bachelor of science degree in mechanical engineering will be required to take the State of Alaska Engineer-in-Training Examination in their general field.

Requirements

Mechanical Engineering — B.S. Degree

1. Complete the general university requirements.

2. Complete the following degree and program (major) requirements. Students must plan their elective courses in consultation with their mechanical engineering faculty advisor, and all elective courses must be approved by their mechanical engineering faculty advisor. At least 6 of the 16 social science and humanities elective credit must be: (a) above the 100 level; or (b) advanced courses in a 100 level sequence. Sufficient depth in at least one of the areas must be demonstrated by evidence of a sequence of courses. This sequence must be approved by the student's departmental advisor.

First Year

Fall Semester	*16 credits*
Engl. 111 — Methods of Written Comm	3
Math. 200 — Calculus	4
E.S. 101 — Descriptive Geometry for Engineers	2
Chemistry Elective	4
Humanities/Social Science Elective	3

Spring Semester	*17 credits*
Speech Comm. Elective	3
Math. 201 — Calculus	4
E.S. 201 — Computer Techniques	3
Chemistry Elective	4
Humanities/Social Science Elective	3

Second Year

Fall Semester	*17 credits*
Phys. 211 — General Physics	4
Math. 202 — Calculus	4
E.S. 209 — Statics	3
M.E. 321 — Industrial Processes	3
Engl. 213 — Intermediate Exposition	3

Spring Semester	*16 credits*
Phys. 212 — General Physics	4
Math 302 — Differen. Equations	3
E.S. 210 — Dynamics	3
E.S. 346 — Thermodynamics	3
Humanities/Social Science Elec.	3

Third Year

Fall Semester	*16 credits*
E.S. 301 — Engineering Analysis	3
E.S. 307 — Elements of Electrical Engr.	3
E.S. 331 — Mechanics of Materials	3
E.S. 341 — Fluid Mechanics	4
Humanities/Social Science Elective	3

Spring Semester	*16 credits*
M.E. 302 — Mechanical Design I	4
M.E. 313 — Mech. Engr. Thermodyn.	3
M.E. 441 — Heat and Mass Transfer	3
E.S. 308 — Instrumentation and Measurement	3
Humanities/Social Science Elec	3

Fourth Year

Fall Semester	*16 credits*
M.E. 403 — Mechanical Design II	4
M.E. 415 — Thermal Systems Lab	2
M.E. Elective**	3
E.S. 334 — Elements Material Science Engr	3
Technical Elective*	3
Humanities/Social Science Elective	1

Spring Semester	*16 credits*
M.E. 487 — Design Project	3
M.E. 408 — Dynamics of Systems	3
M.E. Elective**	3
ESM 450 — Econ. Analysis and Operations	3
Approved Elective	4

*Engineering Course at 400 level or above
**Mechanical Engineering Course at 400 level or above

Selection of the elective courses must be made in consultation with M.E. advisor.

Mechanical Engineering — M.S. Degree

For complete information on the graduate program in Mechanical Engineering, see the UAF Graduate Catalog.

Medical Technology

University of Alaska Fairbanks/University of Washington Cooperative Program

Students may enroll for four semesters at UAF completing requirements noted below, then apply for acceptance into the professional phase of the medical technology program at the University of Washington for an additional seven quarters. Up to four bona fide Alaska resident students will be accepted into the professional phase each year, if they qualify for admittance to the program. The B.S. degree is granted from the University of Washington.

Requirements

60 semester credits with a GPA of 3.00 including the following courses:

	Credits
BIOL 105-106 — Fundamentals of Biology I and II	8
BIOL 111-112 — Human Anatomy and Physiology or BIOL 210 — Animal Physiology and BIOL 317 — Comp. Anatomy of Vertebrates	8 or 9
BIOL 442 — Bacteriology and Immunology	5
CHEM 105-106 — General Chemistry	8
CHEM 212 — Quantitative Analysis	4
CHEM 321-322-324 — Organic Chemistry and lab	9
MATH 271-272 or STAT 301 — Calculus; Statistics	7 or 8
ENGL 111-211 or 213 — Written Communication	6
SPC 121 — Fundamentals of Oral Comm: Interpersonal	3
Social Studies elective — 3 credits, Humanities elective — 3 credits, other electives — 8-9 credits	

For information on application procedures to the University of Washington and the Medical Technology Program contact the Health Professions Adviser, University of Alaska Fairbanks, Fairbanks, Alaska 99775.

Military Science

College of Liberal Arts Department of Military Science

Minor only

The Army Reserve Officers' Training Program is a cooperative effort agreed to by the Army and UAF as a means of providing junior officer leadership in the interest of national security. The goal of the program is to assist young men and women with leadership potential in obtaining commissions in the Army Reserve, National Guard or Regular Army.

The program of instruction is designed to complement the student's goal of obtaining a bachelor's degree in a course of study of his/her own choosing. Through academic instruction and practical experience laboratories, the student becomes familiar with the leadership, management and decision-making qualities necessary for the Army officer and civilian executive.

ROTC is divided into the basic course for freshmen and sophomores and the advanced course for juniors and seniors. Programs and courses can be adjusted to meet specific needs of individual students who desire to enroll but are past their freshman year. Military science courses are open to all students regardless of whether or not they intend to seek an Army commission.

Basic Course — All UAF students are eligible to enroll. There is no military obligation incurred by enrolling in any of the basic courses.

Advanced Course — Those students who successfully complete the basic course and desire to pursue the program for a commission, may apply for enrollment in the advanced course. Students with prior military service may also apply for immediate enrollment as an advanced course student. Applicants must be physically qualified and be selected by the professor of military science. The criterion for selection is based on both academic proficiency and leadership potential. Those students selected who desire to compete for a commission are provided a $100-per-month subsistence allowance. They also incur a military obligation. Students who wish to enroll in advanced course classes, but do not desire to earn a commission, may do so with the approval of the department head. The obligation and subsistence allowance will be waived for those students.

Academic Credit — A maximum of 23 credits in military science courses may be used as elective credit toward fulfillment of baccalaureate degree requirements.

MINOR in Military Science — Military science is an approved minor for the bachelor of arts degree. The requirements for the minor are the satisfactory completion of 19 credits in military science as approved by the department.

Financial Aid — Advanced course students receive a monthly subsistence allowance during the school year which presently amounts to approximately $2,000 for the two-year period. This allowance is tax free.

Uniforms and Equipment — Students enrolled in military science are furnished uniforms and texts by the department.

Awards — Awards are made annually at the UAF awards ceremony. Awards, such as the governor's and chancellor's medals, are presented for outstanding achievement in the ROTC program, academic achievement, and leadership.

ROTC Rifle Team — Competition is scheduled with civilian and military teams in the state. Postal matches with other schools are fired throughout the year. All necessary equipment is furnished by the Department of Military Science at no cost to the student.

Two-Year Program — A special Basic Camp program is available for transfer students and others who were unable to take ROTC prior to their last two years in school. This program allows immediate acceleration into the advanced course. Students should consult the PMS prior to 1 June annually for information concerning the camp.

Scholarships — Army ROTC scholarships pay all tuition, lab fees, and provide a book allowance in addition to the $100 monthly stipend. Scholarships are awarded for two or three years on a competitive basis. Interested students should contact the military science department for further details.

Mineral Preparation Engineering

School of Mineral Engineering
Department of Mining and Geological Engineering

Degree: M.S.

Minimum Requirements for Degree: 30-33 credits beyond bachelor's degree.

For complete information on the graduate program in mineral preparation Engineering, see the UAF Graduate Catalog.

Mining Engineering

School of Mineral Engineering
Department of Mining and Geological Engineering

Degrees: B.S., M.S., E.M.

Minimum Requirements for Degrees: B.S. — 133 credits; M.S. — 30-36 additional credits; E.M. — thesis and 5 years of experience

In the mining 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 allows the student the choice of technical electives to develop in areas of exploration, mining or mineral beneficiation.

Candidates for the bachelor of science degree in mining engineering will be required to take a comprehensive examination in their general field (completion of the State of Alaska Engineer-in-Training examination will satisfy this requirement). The state of Alaska Engineering-in-Training is a first step toward registration as professional engineers.

Students may initiate their mining engineering program in Anchorage and transfer to Fairbanks upon completion of their freshman or sophomore year. Such students should be in communication with faculty of the Mining Engineering Department, UAF.

Requirements

Mining Engineering — B.S. Degree

1. Complete the general university requirements.
2. Complete the following degree and program (major) requirements:

First Year

Fall Semester	*17 Credits*
Engl. 111 — Methods of Written Communications	3
Math. 200 — Calculus	4
Chem. 105 — General Chemistry	4
Min. 103 — Introduction to Mining Engineering	2
Min. 104 — Mining Safety and Operations Lab	1
Social Sciences or Humanities Elective[1,2]	3

Spring Semester	*16 Credits*
Chem. 106 — General Chemistry	4
Sp.C. Elective	3
Math. 201 — Calculus	4
E.S. 101 — Descriptive Geometry for Engineering	2
Geos. 261 — General Geology for Engineers	3

Second Year

Fall Semester	*17 Credits*
Math. 202 — Calculus	4
G.E./Geos. 262 — Mineralogy and Petrology for Engr.	3
Phys. 211 — General Physics	4
Min. 202 — Mine Surveying	3
M.Pr. 313 — Introduction to Mineral Preparation	3

Spring Semester	*17 Credits*
Phys. 212 — General Physics	4
E.S. 208 — Mechanics	4
E.S. 201 — Computer Techniques	3
Engl. 211 or 213 — Intermediate Exposition	3
Math. 302 — Differential Equations	3

Third Year

Fall Semester	*15 Credits*
E.S. 331 — Mechanics of Materials	3
E.S. 341 — Fluid Mechanics	4
Stat. 400 — Statistics	3
E.S. 307 — Elements of Electrical Engineering	3
Geos. 432L — Geology of Mineral Resources Laboratory	2

Spring Semester	*16 Credits*
E.S. 346 — Basic Thermodynamics	3
Min. 370 — Rock Mechanics	3
Min. 301 — Mine Plant Design	3
Min. 302 — Underground Mine Environmental Engineering	3
Social Sciences or Humanities[1,2]	4

Fourth Year

Fall Semester	*18 Credits*
Min. 443 — Rock Fragmentation	3
Min. 445 — Design of Surface Mines for Conv. & Arctic Cond.	3
Min. 446 — Underground Mining Meth. & Their Design	3
Min. 447 — Mining Methods for Placer and Offshore Deposits	3
Social Sciences or Humanities[1,2]	6

Spring Semester	*17 Credits*
Min. 408 — Mineral Valuation and Economics	3
Min. 409 — Operations Research & Computer Appl. in Min. Ind.	3
Min. 490 — Mine Design Project	2
Technical Electives[2]	6
Social Sciences or Humanities[1,2]	3

Notes:

[1] Of the 16 social science/humanities credits, at least 6 must be at or above the 200 level or advanced courses in a 100 level sequence. Sufficient depth in at least one of the areas must be demonstrated by evidence of a sequence of courses. This sequence must be approved by the student's departmental advisor.

[2] Students must plan their elective courses in consultation with their mining engineering faculty advisor. Technical electives are selected from the list of the approved technical electives for mining engineering program and other programs course listing. All elective courses must be approved by the department head.

Recommended Technical Electives for B.S. in Mining Engineering

1. Min. 472 — Design, Construction and Stability of Mining Openings.
2. G.E. 405 — Exploration Geophysics
3. G.E. 440 — Slope Stability
4. M.Pr. 410 — Materials Handling Systems for Mineral Preparation

At least three out of the six technical elective credits must be taken from the above list of the approved technical electives. The other three credits should be chosen in consultation with the advisor and subject to approval by the department head.

Mining Engineering — M.S. Degree

For complete information on the graduate program in Mining Engineering, see the UAF Graduate Catalog.

Museum Studies

College of Natural Sciences

The Museum Studies courses provide students with an understanding of the functions and roles of museums in contemporary society, with academic instruction as well as practical hands-on experience. Emphasizing a broad natural history focus, Museum Studies courses present a comprehensive perspective of education, research and public service in museums and cover a variety of subjects.

Music

College of Liberal Arts
Department of Music

Degrees: B.A., B.M., M.A., M.A.T.
Minimum Requirements for Degrees: B.A. — 130 credits; B.Mus. — 127 credits, M.A. — 30 additional credits; M.A.T. — 36 additional 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 in performance degree offers intensive specialization for those desiring professional training in music performance.

The various music organizations maintained by the department offer participation for students in all academic divisions of the university. Music majors will be required to participate in at least one ensemble (band, choir, orchestra, chorus) each semester they are enrolled. In addition, participation in chamber music opportunities is offered. Piano majors may receive ensemble credit by performing as accompanists.

Attendance at recitals and concerts provides students with a variety of musical experiences which expand their regular curriculum, therefore, attendance is mandatory for all majors. All applied music students are expected to perform in student recitals during each semester of study.

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 jury 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 Bach Chorales; (3) improvisation of a chordal accompaniment to a simple melody; and (4) transposition and harmonization of the same song to another key.

Students who desire to enroll in music theory courses will complete a placement examination and be allowed to enter at their appropriate level.

Current and prospective music majors may obtain a copy of the music department's handbook for further information about current degree requirements.

The music department of UAF is a full member of the National Association of Schools of Music, the national accrediting organization.

Requirements

Music — B.A. Degree
1. Complete general university requirements and B.A. degree requirements.
2. Complete the following program (major) requirements:

	Credits
Mus. 131-132 — Basic Theory	4
Mus. 133-134 — Basic Ear Training	4
Mus. 221-222 — History of Music	6
Mus. 231-232 — Advanced Theory	4
Mus. 233-234 — Advanced Ear Training	2
Mus. 331 — Form and Analysis	3
**Mus. 190 — Recital Attendance	0

Six credits to be selected from:	Credits
Mus. 421 — Music before 1620	3
Mus. 422 — Music in the 17th and 18th Century	3
Mus. 423 — Music in the 19th Century	3
Mus. 424 — Music in the 20th Century	3
*Mus. 161-462 — Applied Music (major area)	8
Ensembles (may include up to 2 credits of Music 307 — Chamber Music)	6
Mus. 253 — Piano Proficiency	0

3. Minimum credits required 130

*The applied music credit minimums defined for the major area of performance may be distributed over more than one instrumental area provided that the required level of competency is achieved for one instrument.

Music — B.M. Degree (Performance)
1. Complete the general university requirements.
2. Complete the following degree and program (major) requirements:

	Credits
Engl. 111 or equivalent and 211 or 213	6
Speech Communications	3
Humanities (non-music)	15
Mathematics (including Computer Science) Natural Science, Social Science	15

Required Music Courses:	Credits
*Mus. 161-462 — Applied Music (major)	24
Mus. 131-132 — Basic Theory	4
Mus. 133-134 — Basic Ear Training	4
Mus. 221-222 — History of Music	6
Mus. 231-232 — Advanced Theory	4
Mus. 233-234 — Advanced Ear Training	2
Ensembles (1 per semester)	8

Secondary Area:

Thirty credits to be selected from the following:	Credits
Mus. 124 — Music in World Cultures	3
[1]Mus. 153 — Functional Piano	1
[2]Mus. 161-162, 261-262, 361-362, 461-462 — Applied Music (Secondary Performance Area)	2 or 4
Mus. 223 — Alaskan Native Musics	3
[1]Mus. 307 — Chamber Music	1
[1]Mus. 313 — Opera Workshop	1-3
[1]Mus. 317 — Arctic Chamber Orchestra	1
[5]Mus. 331 — Form and Analysis	3
Mus. 351 — Conducting	3
[4]Mus. 421-424 — Period History	6
[5]Mus. 431 — Counterpoint	3
[5]Mus. 432 — Orchestration	3
[5]Mus. 433 — Composition	3
[3]Mus. 493 — Special Topics	Arr.

**Mus. 190 — Recital Attendance	0
Mus. 253 — Piano Proficiency	0

3. Minimum credits required for degree 127

[1] Repeatable for credit — Mus. 153, 307, 313, 317
[2] Any level repeatable for credit — Mus. 161-162, 261-262, 361-362, 461-462. Maximum total of 6 credits.
[3] Repeatable for credit — Mus. 493. Maximum total of 6 credits.
[4] Minimum of 6 credits to be selected from Mus. 421, 422, 423, 424.
[5] Minimum of 6 credits to be selected from Mus. 331, 431, 432, 433.
*The applied music credit minimums defined for the major area of performance may be distributed over more than one instrumental area provided that the required level of competency is achieved for one instrument.

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. See music department's handbook for details.

Music — B.M. Degree
(Music Education — Secondary)
1. Complete the general university requirements.
2. Complete the following degree and program (major) requirements:

	Credits
Engl. 111 or equivalent and 211 or 213	6
Speech Communications	3
Humanities (non-music)	15
Mathematics (including Computer Science), Natural Science, Social Science; must include Psy. 101	15

Required Music Courses:	*Credits*
*Mus. 161-462 — Applied Music (major)	14
Mus. 131-132 — Basic Theory	4
Mus. 133-134 — Basic Ear Training	4
Mus. 221-222 — History of Music	6
Mus. 231-232 — Advanced Theory	4
Mus. 233-234 — Advanced Ear Training	2
Mus. 315 — Music Methods and Techniques	10
Mus. 331 — Form and Analysis	3
Mus. 351 — Conducting	3
Mus. 432 — Orchestration	3
Ensembles (1 per semester)	8
**Mus. 190 — Recital Attendance	0
Mus. 253 — Piano Proficiency	0

Courses required for Secondary Certification (Contact the Department of Education before beginning education courses):

Mus. 405 — Secondary School Music Methods	3
Psy. 240 — Developmental Psychology	3
Ed. 201 — Introduction to Education	3
Ed. 330 — Diagnosis and Evaluation of Learning	3
Ed. 407 — Reading Strategies for Secondary Students	3
Ed. 424 — Small School Programs	
or	
Ed. 425 — Community as Education Resource	3
Ed. 430 — Multicultural Teaching Techniques	3
Ed. 453 — Secondary Student Teaching	12

One course from the following:

Ed. 345 — Sociology of Education	3
Ed. 346 — Structure of American/Alaskan Education	3
Ed. 350 — Communication in Cross-Cultural Classrooms	3
Ed. 380 — Cultural Influence in Education	3
Ed. 450 — Education and Cultural Transmission	3

3. Minimum credits required 136

*The applied music credit minimums defined for the major area of performance may be distributed over more than one instrumental area provided that the required level of competency is achieved for one instrument.

Music — B.M. Degree
(Music Education — Elementary)
1. Complete the general university requirements.
2. Complete the following degree and program (major) requirements:

	Credits
Engl. 111 or equivalent and Engl. 211 *or* 213	6
Speech Communications	3
Humanities (non-music)	15
Mathematics (including Computer Science), Natural Science, Social Science; must include Psy. 101 and 6 credits of Mathematics	15

Required Music Courses:	
*Mus. 161-462 — Applied Music (major)	14
Mus. 131-132 — Basic Theory	4
Mus. 133-134 — Basic Ear Training	4
Mus. 221-222 — History of Music	6
Mus. 231-232 — Advanced Theory	4
Mus. 233-234 — Advanced Ear Training	2
Mus. 309 — Elementary School Music Methods (same as Ed. 309)	3
Mus. 315 — Music Methods and Techniques	10
Mus. 331 — Form and Analysis	3
Mus. 351 — Conducting	3
Mus. 432 — Orchestration	3
Ensembles (1 per semester)	8
**Mus. 190 — Recital Attendance	0
Mus. 253 — Piano Proficiency	0

Required education courses (Contact education department before beginning education courses):

Psy. 240 — Developmental Psychology	3
Ed. 201 — Introduction to Education	3
Ed. 304 — Literature for Children	3
Ed. 330 — Diagnosis and Evaluation of Learning	3
Ed. 381 — Foundations of Literacy Development	3
Ed. 419 — Integrated Methods and Curriculum Development	6
Ed. 421 — Multi-cultural Classrooms	3
Ed. 452 — Elementary Student Teaching	12

One course from the following:

Ed. 345 — Sociology of Education	3
Ed. 346 — Structure of American/Alaskan Education	3
Ed. 350 — Communication in Cross-Cultural Classrooms	3
Ed. 380 — Cultural Influences in Education	3
Ed. 450 — Education and Cultural Transmission	3

3. Minimum credits required 142

*The applied music credit minimums defined for the major area of performance may be distributed over more than one instrumental area provided that the required level of competency is achieved for one instrument.

Music — B.M. Degree
(Music Education—K-12)
1. Complete the general university requirements.
2. Complete the following degree and program (major) requirements:

	Credits
Engl. 111 or equivalent and 211 or 213	6
Speech Communications	3
Humanities (non-music)	15
Mathematics (including Computer Science), Natural Science, Social Science; must include Psy. 101	15

Required Music Courses:	*Credits*
Mus. 131-132 — Basic Theory	4
Mus. 133-134 — Basic Ear Training	4
**Mus. 190 — Recital Attendance	0
Mus. 221-222 — History of Music	6
Mus. 231-232 — Advanced Theory	4
Mus. 233-234 — Advanced Ear Training	2
Mus. 253 — Piano Proficiency	0
Mus. 351 — Conducting	3
Mus. 331 — Form and Analysis	3
Mus. 432 — Orchestration and Arranging	3
*Mus. 161-362 — Private Lessons	12
Mus. 315 — Music Methods and Techniques	10
Mus. 405 — Secondary School Music Methods	3
Mus. 309 — Elementary School Music Methods	3
Mus. 101, 203, 205, 211 — Large Ensembles	7

Required Education Courses:	*Credits*
Psy. 240 — Developmental Psychology	3
Ed. 330 — Diagnosis and Evaluation of Learning	3
Ed. 201 — Introduction to Education	3
Ed. 407 — Reading Strategies for Secondary Teachers	3
Ed. 454 — Student Teaching	12
One course from the following:	
Ed. 345 — Sociology of Education	3
Ed. 346 — Structure of American/Alaskan Education	3
Ed. 350 — Communication in Cross-Cultural Classrooms	3
Ed. 380 — Cultural Influences in Education	3
Ed. 450 — Education and Cultural Transmission	3

3. Minimum credits required 131

*The applied music credit minimums defined for the major area of performance may be distributed over more than one instrumental area provided that the required level of competency is achieved for one instrument.

MINOR in Music:

A minor in Music requires 18 credits in music to be selected from the following:

Music Theory, History and Appreciation (courses to be selected with approval of department head)	12
Mus. 151, 153, 161-462	4
Mus. 101, 203, 205, 211	2

**All undergraduate students majoring in Music must enroll in Music 190 — Recital Attendance during each semester of their residence.

Music — M.A. or M.A.T. Degree

Each graduate student's program is individually tailored and designed to meet the student's professional interests and aspirations, consistent with university principles and procedures.

Students may select from the following areas of specialization for the M.A. degree: performance, music education, music theory/composition, music history, and Alaskan ethnomusicology.

The master of arts in teaching is designed primarily as a functional program for the public school music teacher. Areas of specialization are instrumental, vocal, music supervision, and elementary specialist. The program is determined by the student and his/her committee.

For complete information on the graduate programs in music, see the UAF Graduate Catalog.

Natural Resources Management

School of Agriculture and Land Resources Management
Division of Resources Management

Degrees: B.S., M.S.
Minimum Requirements for Degree: B.S. — 130 credits; M.S. — 30-35 credits

The basic natural resources management curriculum is designed to provide students with a broad education in the various natural resources and their related applied fields. Programs can be tailored to specific interests of students and can combine the natural resources basic program with such fields as education, communications or political science or with greater depth in natural science and resources. The program is designed for students desiring a career in resource management or in other fields in which knowledge of resource management is useful, students planning to proceed to advanced study, and students of many plans who wish to be better informed citizens about today's important resource issues. The curricula for the B.S. in natural resources management/forestry and the B. S. in natural resources management/agriculture degrees are designed to provide the same basic science background and much the same basic resource background as the general degree, but, in addition, include greater depth in either forestry or agriculture. (The NRM/forestry degree *is not* equivalent to an accredited B. S. in forestry degree.)

Practical experience, "hands on" field and laboratory activities and applied aspects are stressed throughout the program. Internships and work-study arrangements are often available—with or without credit, with or without pay—for qualified students.

Requirements

Courses required for the majors may also be used to satisfy the general university requirements as appropriate.

Natural Resources Management — B.S. Degree
1. Complete general university requirements and B.S. degree requirements.
2. Complete the following program (major) requirements:

	Credits
BA 101 — Introduction to Management Information Systems *or* Approved Elective	3
BIOL 105-106 — Fundamentals of Biology, I and II	8
BIOL 271 — Principles of Ecology	4
CHEM 105-106 — General Chemistry	8
ECON 235 — Intro. to Nat. Resource Econ.	3
ECON 335 — Intermediate Natural Resource Econ.	3
GEOS 101 — The Dynamic Earth	4
ALR 101 — Conservation of Natural Resources	3
ALR 201 — Processes of Natural Resources Management	3
ALR 251 — Silvics and Dendrology	3
ALR 340 — Natural Resources Measurements	3
ALR 370 — Introduction to Watershed Management	3
ALR 380 — Soils	3
ALR 400 — Natural Resource Policies *or* ALR 401 — Natural Resource Legislation	3
ALR 430 — Land Use Planning	3
ALR 460 — Outdoor Recreation	3
WLF 201 — Wildlife Management Principles	2

3. Plus at least 12 credits from the following courses in the environment and/or resources. Approved courses not listed here may at times be applied toward this requirement.

	Credits
ALR 102 — Practicum in Natural Resources	1-3
ALR 211 — Introduction to Agronomy and Horticulture	3
ALR 320 — Introduction to Animal Science	3
ALR 360 — Outdoor Recreation Planning	3
ALR 411 — Plant Propagation	3
ALR 450 — Forest Management	3
ALR 461 — Interpretive Services	3
BIOL 471 — Population Ecology	3
BIOL 472 — Communities and Ecosystems	3
BIOL 480 — Water Pollution Biology	2
EQS 603 — Solid Waste and Air Pollution	3
ECON 437 — Regional Economic Development	3
FISH 430 — Fisheries and their Management	3
GEOG 327 — Cold Lands	3
GEOG 402 — Man and Nature	3
GEOS 304 — Geomorphology	3
MIN 101 — Minerals and Man	3
MIN 407 — Mineral Industry and Environment	2
SOC 307 — Demography	3
WLF 417 — Forest and Tundra	2
WLF 419 — Wetlands	2
Any ALR course not used in the above categories.	

4. Plus a minimum of 12 credits in one of the following fields or subject areas beyond those taken to fulfill numbers 2 and 3 above. These courses are to be selected for their clear pertinence to a cohesive program in resource study and must be approved by the director.

- Agriculture and Land Resources
- Anthropology (cultural)
- Biological Sciences
- Broadcasting, Journalism
- Civil Engineering, Engineering Sciences and/or Environmental Quality Engineering
- Business Administration
- Economics
- Education
- Fisheries
- Geography
- Geosciences
- Justice
- Mineral Engineering
- Political Science
- Psychology
- Sociology
- Wildlife Management

5. The total program must include a minimum of 12 credits in the following social sciences: anthropology, economics, sociology, political science and/or psychology. In addition, a demonstrated proficiency in computer applications prior to the junior year is required.

6. Minimum credits required 130

Natural Resources Management/Forestry — B.S. Degree

1. Complete the general university requirements and B.S. degree requirements.
2. Complete the following program (major) requirements:

	Credits
BA 101 — Introduction to Management Information Systems *or* Approved Elective	3
BIOL 105-106 — Fundamentals of Biology, I and II	8
BIOL 271 — Principles of Ecology	4
CHEM 105-106 — General Chemistry	8
ECON 235 — Intro. to Nat. Resource Econ.	3
ECON 335 — Intermediate Natural Resource Econ.	3
GEOS 101 — The Dynamic Earth	4
ALR 101 — Conservation of Natural Resources	3
ALR 201 — Processes of Natural Resources Management	3
ALR 251 — Silvics and Dendrology	3
ALR 340 — Natural Resources Measurements	3
ALR 370 — Introduction to Watershed Management	3
ALR 380 — Soils	3
ALR 400 — Natural Resource Policies *or* ALR 401 — Natural Resource Legislation	3
ALR 430 — Land Use Planning	3
ALR 460 — Outdoor Recreation	3
WLR 201 — Wildlife Management Principles	2

3. Complete the following courses:

	Credits
CE 112 — Elementary Surveying	3
BOT 239 — Introduction to Plant Biology	4
ALR 450 — Forest Management	3
ALR 451 — Regeneration and Silviculture of Northern Boreal Forests	3
ALR 452 — Forest Protection	3
ALR 453 — Harvesting and Utilization of Forest Products	3

4. Complete nine credits from the following list of restricted electives:

GEOS 422 — Geoscience Applications of Remote Sensing	3
GEOS 408 — Map and Airphoto Analysis	2
FISH 430 — Fisheries Management	3
WLR 303 — Wildlife Management Techniques	3
WLF 417 — Wildlife Management — Forest and Tundra	2
BA 301 — Processes of Management	3
BA 350 — Introduction to Real Estate and Land Economics	3
BOT 331 — Systematic Botany	4
ALR 300 — Internships in Natural Resources Management *(Must Be Forestry Related)*	1-6
ALR 310 — Agricultural Concepts and Techniques	3
ALR 312 — Intro. to Range Management	3

5. Fulfill requirements of category 5 in the B.S. in natural resources management.

6. Minimum credits required.....130

Preforestry Program

For students interested in a professional forestry degree, the School of Agriculture and Land Resources Management offers a two-year preforestry program that will permit them to transfer to an accredited forestry institution.

The preforestry program introduces the student to land resource management and provides lower level core courses common to most forestry curricula. Although forestry curricula vary by institution, UAF's preforestry program will allow the expeditious transfer of credits to institutions that offer accredited four-year degree programs in forestry. For example, under an agreement with Northern Arizona University, a student who has completed the preforestry program may transfer to the accredited four-year forestry program at Northern Arizona University without loss of credit or class standing.

Students desiring to complete the two-year preforestry program at UAF with the intention of transferring to a specific four-year forestry degree program elsewhere should discuss these plans with their faculty adviser before registering for classes at UAF. This will ensure a course schedule that will provide the expeditious transfer of credit.

In summary, a student who completes the preforestry program at UAF may transfer to a four-year accredited forestry degree program elsewhere, or may complete a four-year degree program at UAF in natural resources management under the forestry option.

Natural Resources Management/Agriculture—B.S. Degree

1. Complete the general university requirements and B.S. degree requirements.
2. Complete the following core (major) requirements for the agriculture option:

	Credits
Biol. 105-106 — Fundamentals of Biology, I and II	8
Biol. 271 — Principles of Ecology	4
Chem. 105-106 — General Chemistry	8
Chem. 321 — Organic Chemistry	3
Econ. 235 — Intro. to Nat. Resource Econ.	3
Econ. 335 — Intermediate Natural Resource Econ	3
Stat. 301 — Applied Statistics	
A.L.R. 101 — Conservation of Natural Resources	3
A.L.R. 102 — Practicum in Natural Resources	1-3
A.L.R. 211 — Introduction to Agronomy & Horticulture	3
A.L.R. 310 — Agricultural Concepts & Techniques	3
A.L.R. 320 — Introduction to Animal Science	3
A.L.R. 380 — Soils	3
A.L.R. 480 — Soil Conservation	3

3. Complete a minimum of 26 credits in the following natural resource electives:

	Credits
Geos. 101 — The Dynamic Earth	4
A.L.R. 201 — Processes of Natural Resources Management	3
A.L.R. 251 — Dendrology and Silvics	3
A.L.R. 300 — Internship in Natural Resources Management	1-6
A.L.R. 312 — Introduction to Range Management	3
A.L.R. 313 — Introduction to Plant Pathology	4
A.L.R. 321 — Applied Animal Nutrition	3
A.L.R. 340 — Natural Resources Measurements	3
A.L.R. 370 — Introduction to Watershed Science	3
A.L.R. 400 — Natural Resources Policies	3
A.L.R. 401 — Natural Resources Legislation	3
A.L.R. 403 — Managing Food Production Systems	4
A.L.R. 411 — Plant Propagation	3
A.L.R. 412 — Field Crop Production	3
A.L.R. 420 — Animal Nutrition and Metabolism	3
A.L.R. 425 — Alaska's Reindeer Industry	3
Any other approved ALR course not used in the above categories.	

4. Complete a minimum of 12 credits from the following list of courses:

	Credits
Biol. 210 — Animal Physiology	4
Bot. 239 — Plant Form and Function	4
Biol. 342 — Introductory Microbiology	4
Biol. 362 — Principles of Genetics	4
Bot. 331 — Systematic Botany	4
Biol. 406 — Entomology	4
Bot. 416 — Plant Physiology	3

5. Complete a minimum of 12 credits in one of the following fields or subject areas beyond those taken to fulfill categories 2 and 3 above. These courses are to be selected for their clear pertinence to a cohesive program in resource study and must be approved by the Plant and Animal Science Division Head.

Agriculture and Land Resources
Biological Sciences
Broadcasting, Journalism
Business Administration
Chemistry
Civil Engineering, Engineering Sciences and/or
Environmental Quality Engineering
Computer Science
Economics
Education
Geography
Geosciences
Political Science
Rural Development
Statistics
Wildlife Management

6. The total program must include a minimum of 12 credits in the following social sciences: anthropology, economics, sociology, political science, and/or psychology In addition, a demonstrated proficiency in computer applications prior to the junior year is required.

7. Minimum credits required.....130

Natural Resources Management — M.S. Degree

For complete information on the graduate program in natural resources management, see the UAF Graduate Catalog.

Northern Studies

Interdisciplinary

Degree: B.A.
Minimum Requirements for Degree: B.A. — 130 credits

The purpose of the northern studies program is to give interested students a broader study of the northern region — its environment, peoples, and problems. The major in northern studies is interdisciplinary.

The northern studies curriculum is centered around an interdisciplinary seminar, the Northern Studies Seminar, History 484, which is taken in the senior year. Students also must complete 10 courses, constituting a core program and select an additional two courses of their choice from the disciplines represented in the core curriculum.

Requirements

Northern Studies — B.A. Degree
1. Complete general university requirements and B.A. degree requirements.
2. Complete the following program (major) requirements:

	Credits
Core:	
BIOL 104 — Natural History of Alaska	3
PS 210 — Alaska Government and Politics or	
PS 263 — Alaska Native Politics	3
ANL 215 — Alaska Native Languages	3
ANTH 242 — Native Cultures of Alaska or	
ANTH 245 — Circumpolar Cul Traditions and Transformations or	
ANTH 329 — Peoples of the Russian North	3
GEOG 327 — Cold Lands	3
HIST 384 — History of the Circumpolar North	3
NS 484 — Northern Studies Seminar	3
*Select 15 credits from two of the following groups:**	
Anthropology:	
ANTH 242 — Native Cultures of Alaska or	
ANTH 245 — Circumpolar Cul Traditions and Transformations or	
ANTH 329 — Peoples of the Russian North	3
(May not use the same course selected for the core.)	
ANTH 309— Arctic Prehistory	3
ANS/ANTH 320 — Lang and Culture: Appl to Alaska	3
ANTH 321 — Physical Anthropology of the Americans	3
ANTH 350 — Russian Period in Alaska 1974—1867	3
ANTH 380 — The People of Alaska Southwest	3
ANTH 381 — The Inupiaq and Yup'ik Peoples	3
ANTH 382 — The People of Alaska Southeast	3
ANTH 383 — Athabaskan Peoples of Alaska & Adjacent Canada	3
Geography:	
GEOG 202 — Geography of United States and Canada	3
GEOG 302 — Geography of Alaska	3
GEOG 306 — Geography of the Soviet Union	3

History:
HIST 320 — Modern Scandinavia 3
HIST 340 — Russian Eastward Expansion 3
HIST 341 — History of Alaska 3
HIST 344 — Modern Russian 3
HIST 354 — Canadian History to 1867 3
HIST 355 — Canadian History 1867 to Present 3
HIST 375 — History of the Northern Pacific
HIST 380 — Polar Exploration and Its Literature 3
HIST 382 — History of Circumpolar Research 3
HIST 460 — Russian American 3
Political Science:
PS 310 — The Politics of Post-Industrial States 3
PS 311 — Government and Politics of the Soviet Union 3
PS 321 — International Politics 3
PS 322 — International Law and Organizations 3
PS/ANS 325 — Native Self Government 3
PS/ANS 450 — Comparative Aboriginal Rights and Policies 3
PS 481 — Geopolitics and International Environ 3
Humanities:
ANS 301 — Native Cultural Heritage Documentation 3
ART 364 — Native Art of Alaska 3
ENGL 349 — Narrative Art of Alaska Native Peoples 3
ENGL 350 — Literature of Alaska and the Yukon Territory 3
MUS 441 — Alaska Native Music and Social Change 3
Two semesters of a northern language, such as Eskimo, Russian, or Danish 10
3. Minimum credits required 130

*Students are encouraged to use the major in conjunction with a discipline-based major. Double majors linking Northern Studies with, for example, Alaska Native studies, anthropology, geography, history or political science majors may double count a maximum of 9 credits from the above groupings toward the second major. Other majors may double count a maximum of 9 credits toward their university distribution requirements.

Minor in Northern Studies
A minor in Northern Studies requires the completion of the core courses, excluding NS 484, for a total of 18 credits.

Nursing

The University of Alaska Anchorage College of Nursing is the only baccalaureate nursing program in Alaska and the majority of the course work is available on the Fairbanks campus. The College of Nursing has been designed with the unique health care needs of Alaskans in mind. A combination of climate, geography and divergent cultural backgrounds creates the opportunity — and necessity — for nurses to provide creative health care.

With this situation in mind, the curriculum at the College of Nursing has been developed to foster creativity and independent judgement as part of the role of professional nurse. The first three semesters provide the general education foundation for the nursing courses. Five clinical courses, each building upon the previous one, follow over the next five semesters. The first two courses deal with nursing care of the essentially well and at risk client. The student learns basic theory and physical assessment, communication, nursing process and community health concepts, as well as screening procedures, health teaching and well child care. The third and fourth clinical courses are the only courses not available on the UAF campus. The third course deals with nursing care of clients experiencing temporary disruptions of health, primarily in the hospital setting. During the fourth course the student focuses on nursing care of clients experiencing long-term disruptions of health in both hospital and community settings. Theory and practice include working with groups of clients and community planning programs. The final course synthesizes the principles and practice learned in the previous courses. The student spends a concentrated amount of time in a clinical area of professional interest or need, integrating, expanding and practicing concepts and skills learned throughout the nursing curriculum. The College of Nursing has received full national accreditation for this program.

Recognizing the barriers that returning RN's encounter in pursuit of their baccalaureate degrees, UAA has developed the RN Sections. As an adult learner with accumulated learning and experience, the RN can articulate well into the degree program. After completion of general education prerequisites and acceptance, the RN can earn 18 credits by successful completion of two written competency validation examinations and a clinical validation. This allows progression to two semesters and a summer session of study with concentration in physical assessment, family and community assessment, environmental health, mental health needs of aggregates, nursing and health care management, nursing research and clinical concentration.

For further information on the baccalaureate nursing program and continuing education offerings in nursing, please contact: UAA College of Nursing, Arctic Health Research Building, Suite 106, University of Alaska Fairbanks, Fairbanks, Alaska 99775, (907) 474-7764.

Oceanography

School of Fisheries and Ocean Sciences
Graduate Program in Marine Sciences and Limnology

Degree: M.S., Ph.D.
Minimum Requirements for Degree: M.S. — 30 credits; Ph.D. (open)

The Graduate Program in Marine Sciences and Limnology offers M.S. degrees in several areas of oceanography (physical, chemical, biological, geological, fisheries and marine biology). Limnological research projects are also undertaken under the oceanography degree. The Ph.D. degree is offered in oceanography.

Opportunities for laboratory and field work are available through the School of Fisheries and Ocean Sciences and the Institute of Marine Science. These include laboratories at Fairbanks, the Seward Marine Center, the Juneau Center for Fisheries and Ocean Sciences, and the Fishery Industrial Technology Center at Kodiak. Research vessels operated by the institute and school include the R/V *Alpha Helix*, which has open-ocean capabilities and operates in Alaskan coastal waters, the Gulf of Alaska, and the Bering Sea, the R/V *Little Dipper*, which operates on day trips in Resurrection Bay, and the R/V *Maybeso*, which operates in southeast Alaskan waters. Laboratory facilities include a seawater system at Seward and a variety of modern and analytical instrumentation, including mass spectrometers, a variety of alpha, gamma and beta counting equipment, a flow cytometer facility, and a variety of gas and liquid chromatography equipment. Mainframe and personal computing facilities are readily accessible to graduate students.

For complete information on the graduate programs in oceanography, see the UAF Graduate Catalog.

Office Professions

School of Career and Continuing Education
Business Systems and Technology Department

Certificate; Degree: A.A.S.
Minimum Requirements for Degree — 60 credits; for Certificate — 30 credits

The Office Professions program provides students with the specific skills needed to obtain entry level employment or achieve career advancement. Review courses aimed at preparing candidates for the Certified Professional Secretary examination are offered annually.

Courses covering basic knowledge and skills, emerging technology, advanced procedures, and interpersonal skills are offered. Potential careers for graduates include office secretary, stenographer, file clerk, receptionist, word information processors and office supervisors. This department offers both an associate degree and a certificate program.

Requirements

Office Professions — A.A.S. Degree
1. Complete the following general degree requirements: *Credits*
Written Communication 6
(Engl. 111 plus any 200-level written communications course or applied written communications course as approved by the head of the program in which the degree is earned.)
Oral Communication 3
Select a total of 6 credits from the following areas: humanities, social science, mathematics or natural science 6
(At least 3 credits shall be math or natural science at the 100 level or above.)
Subtotal 15

2. Complete the following major degree requirements:
Acct. 101 — Elementary Accounting 3
or
ABUS 142 — Office Accounting I
and
ABUS 143 — Office Accounting II 4
O.P. 105 — Keyboarding II/Intermediate Typewriting 3
O.P. 106 — Keyboarding III/Advanced Typewriting 3
O.P. 131 — Business English 3

O.P. 151 — Microcomputer Word Processing/WordPerfect or
O.P. 152 — Microcomputer Word Processing/Displaywrite 4 2
O.P. 207 — Machine Transcription 2
O.P. 221 — Filing/Records Management 3
O.P. 231 — Business Communications 3
O.P. 244 — Office Procedures 3
Subtotal ..... (minimum of) 25-26

3. Complete 13 (minimum) credits from the following major specialty electives:
Acct. 102 — Elementary Accounting 3
ABUS 155 — Business Math 2
O.P. 090 — Calculating Machines 2
O.P. 100 — Alphabetic Shorthand 3
O.P. 101 — Shorthand Principles I 4
O.P. 102 — Shorthand Principles II 4
O.P. 128 — Word Processing/DisplayWriter 2
O.P. 201 — Shorthand Principles III 3
O.P. 210 — Legal Typewriting 3
O.P. 219 — Legal Machine Transcription 1
O.P. 211 — Medical Typewriting 2
O.P. 214 — Medical Machine Transcription 1
O.P. 228 — Word Processing/Reportpack 1
Any other CAPS, Abus, or O.P. course 1-6

4. Complete 7 general electives credits 7
Degree Total 60
A calculating machines proficiency exam must be passed to complete degree requirements.

Office Professions — Certificate
1. Complete the following major specialty requirements: *Credits*
Acct. 101 — Elementary Accounting 3
or
O.P. 142 — Office Accounting I 2
O.P. 105 — Keyboarding II/Intermediate Typewriting 3
O.P. 106 — Keyboarding III/Advanced Typewriting 3
O.P. 131 — Business English 3
O.P. 151 — Microcomputer Word Processing/Word Perfect or
O.P. 152 — Microcomputer Word Processing/Displaywrite 4 2
O.P. 203 — Calculating Machines 2
O.P. 221 — Filing/Records Management 3

2. Complete 10 credits from the following major specialty electives:
Acct. 102 — Elementary Accounting II 3
or
ABUS 143 — Introduction to Accounting II 2
ABUS 154 — Human Relations 3
ABUS 155 — Business Math 2
O.P. 100 — Alphabetic Shorthand 3
O.P. 101 — Shorthand Principles I 4
O.P. 102 — Shorthand Principles II 4
O.P. 128 — Word Processing/DisplayWriter 2
O.P. 210 — Legal Typewriting 2
O.P. 219 — Legal Machine Transcription 1
O.P. 211 — Medical Typewriting 2
O.P. 214 — Medical Machine Transcription 1
O.P. 228 — Word Processing/ReportPack 1
O.P. 231 — Business Communications 3
O.P. 244 — Office Procedures 3

3. Any other CAPS, ABUS or O.P. course 3
Certificate Total 30-32

Paraprofessional Counseling

School of Career and Continuing Education
Academic Programs

Degree: A.A.S.
Minimum Requirements for Degree: 60 credits

Paraprofessional counseling is a program designed to provide basic training for entry into the job market. It is also a program for personal enrichment. The major role of the paraprofessional counselor is to offer support counseling to those experiencing life changes. Possible areas of employment include alcohol and drug, crisis intervention, mental health and correctional institution programs.

Program Requirements
1. A personal interview with the advisor of the Paraprofessional Counseling program.
2. Three letters of recommendation, submitted to the program advisor prior to the second year.
3. A minimum grade of "C" in all courses required for the PPC degree.

Requirements

Paraprofessional Counseling — A.A.S. Degree
1. Complete the following general degree requirements: *Credits:*
Written Communication 6
(Engl. 111 plus any 200-level written communications course or applied written communications course as approved by the head of the program in which the degree is earned.)
Oral Communication 3
Select a total of 6 credits from the following areas: humanities, social science, mathematics or natural science 6
(At least 3 credits shall be math or natural science at the 100 level or above.)
(NOTE: PSY 101 is a prerequisite for required PPC courses. SOC 101 is recommended.)
Subtotal 15

2. Complete the following major degree requirements:
PPC 101 — Models of Human Personality and Counseling I 3
PPC 102 — Models of Human Personality and Counseling II 3
PPC 105 — Basic Helping Skills 3
PPC 201 — Principles of Group Counseling 3
PPC 205 — Advanced Helping Skills 3
PPC 206 — Paraprofessional Roles and Ethics 3
PPC 208 — Human Problems and Evaluation I 3
PPC 209 — Human Problems and Evaluation II 3
PPC 289 — Practicum I and II 6
Subtotal 30

3. Complete 9 credits from the following major specialty requirements:
PPC 203 — Substance Abuse Counseling I (3)
PPC 204 — Working with Marriage and Family Problems (3)
PPC 207 — Personal Awareness and Growth (3)
PPC 212 — Counseling Children (3)
PPC 215 — Working with People of Other Cultures (3)
SOC 242 — The Family (3)
PPC — Special Topics (6)
Subtotal 9

4. General Electives 6
Degree Total 60

Petroleum Engineering

School of Mineral Engineering
Department of Petroleum Engineering

Degrees: B.S., M.S.
Minimum Requirements for Degrees: B.S. — 133 credits; M.S. — 30-33 additional credits.

Petroleum engineering at UAF offers a unique look at the challenging problems confronting the petroleum industry. Both the bachelor of science and the master of science degrees are available. Requirements for the degrees focus on many disciplines, including mathematics, physics, chemistry, geology and engineering science. In addition, courses in petroleum engineering deal with drilling, formation evaluation, production, reservoir engineering, computer simulation and enhanced oil recovery.

The curriculum at UAF was designed to prepare graduates to meet the demands of modern technology while emphasizing, whenever possible, the special problems encountered in Alaska. Located in one of the largest oil producing states in the nation, the Department of Petroleum Engineering offers one of the most modern and challenging degree programs available.

Requirements

Petroleum Engineering — B.S. Degree
1. Complete the general university requirements.
2. Complete the following degree and program (major) requirements:

First Year
Fall Semester *16 Credits*
Pet.E. 103 — Survey of the Energy Industry 2
Math. 200 — Calculus I 4
Chem 105 — General Chemistry 4
Engl. 111 — Methods of Written Communication 3
Humanities or Social Science Elective[1] 3

Spring Semester *17 Credits*
E.S. 201 — Computer Techniques 3
Math. 201 — Calculus II 4
G.E./Geos. 261 — Geology for Engineers[2] 3

Chem 106 — General Chemistry II 4
*Speech Communication Elective 3

Second Year

Fall Semester — *17 Credits*
Pet.E. 205 — Introduction to Petroleum Drilling and Production 3
Math. 202 — Calculus III 4
Phys. 211 — General Physics I 4
Engl. 211/213 — Intermediate Exposition 3
Humanities or Social Science Elective[1] 3

Spring Semester — *17 Credits*
E.S. 208 — Mechanics 4
Math. 302 — Differential Equations 3
Phys. 212 — General Physics II 4
E.S. 346 — Basic Thermodynamics 3
Humanities or Social Science Elective[1] 3

Third Year

Fall Semester — *16 Credits*
Pet.E. 301 — Reservoir Rock Properties 3
Math. 310 — Numerical Analysis 3
E.S. 331 — Mechanics of Materials 3
E.S. 341 — Fluid Mechanics 4
Humanities or Social Science Elective[1] 3

Spring Semester — *18 Credits*
Pet.E. 302 — Well Logging 3
Pet.E. 305 — Underground Fluid Behavior and Lab 4
Pet.E. 426 — Drilling Engr. & Lab 4
M.E. 441 Heat and Mass Transfer 3
Geos. 370 — Struct. Geol. for Petr. Engr 4

Fourth Year

Fall Semester — *18 Credits*
Pet.E. 407 — Production Engr. & Lab 4
Pet.E. 421 — Subsurface Engineering 3
Pet.E. 431 — Natural Gas Engineering 2
Pet.E. 476 — Reservoir Engineering 3
*Engineering Elective (e.g. ME 416 or E.S. 307) 3
*Technical Elective (e.g. C.E. 603 Arctic Engr.) 3

Spring Semester — *14 Credits*
Pet.E. 456 — Pet. Eval. and Econ. Dec 3
Pet.E. 466 — Petroleum Recovery Meth 3
Pet.E. 478 — Well Test Analysis 2
Pet.E. 489 — Reservoir Simulation 2
Humanities or Social Science Elect[1] 4

Notes:
[1] Sixteen credits in humanities and social sciences are required. All electives must be approved by the petroleum engineering faculty advisor. At least 6 of the 16 credits must be (a.) above the 100-level or (b) advanced courses in a 100-level sequence; and at least 3 credits must be in the humanities and 3 in the social science designation.
[2] Geos. 101 may be taken in a fall semester in place of G.E. 261.
* As approved by advisor.
[3] As approved by the Board of Architects, Engineers and Land Surveyors, students are required to take the EIT exam as a condition of graduation.

Petroleum Engineering — M.S. Degree

The M.S. program is intended to provide the student with an advanced treatment of petroleum engineering concepts. Both a thesis and non-thesis option are available. A number of generous research assistantships are available. Applicants should possess a B.S. degree in engineering or the natural sciences.

For complete information on the graduate program in Petroleum Engineering, see the UAF Graduate Catalog.

Philosophy

College of Liberal Arts
Department of Philosophy and Humanities

Degree: B.A.
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/her to independent reflection on them, thus broadening his/her perspectives for the various areas of specialization in science, the social sciences and humanities.

Requirements

Philosophy — B.A. Degree
1. Complete the general university requirements and B.A. degree requirements.
2. Complete the following foundation requirements:
(May be used to meet general degree requirements.)
6 credits of mathematics at the 100 level or above.
Two years at the college level in a non-English language.
3. Complete the following program (major) requirements:
33 credits in philosophy, including:

Credits
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 and Science 6
Phil. 471 — Contemp. Philosophical Problems 3
Phil. 493 — Special Topics 3

Choose two of the following:
Phil. 321 — Aesthetics 3
Phil. 322 — 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

4. Successfully complete a comprehensive oral examination conducted by the staff of the Department of Philosophy covering all course work in philosophy. The student is to arrange for the examination at the beginning of the last semester of his major study.

5. Minimum credits required 130

MINOR in Philosophy:
A minor in philosophy requires 18 credits of approved philosophy courses including:

Credits
Phil. 201 — Introduction to Philosophy 3
Phil. 351-352 — History of Philosophy and Science 6
Phil. 471 — Contemp. Philosophical Problems 3

Choose six credits from the following:
Phil. 202 — Intro. to Eastern Philosophy 3
Phil. 204 — Introduction to Logic 3
Phil. 321 — Aesthetics 3
Phil. 322 — 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 ..... Arr.

Physical Education

College of Liberal Arts
Department of Physical Education

Degrees: B.A., B.S.
Minimum Requirements for Degrees: B.A. — 130 credits; B.S. — 130 credits

The curriculum in physical education encompasses three programs of instruction: an academic discipline, a teacher certification specialty, and a program for individual development in physical activities.
1. The academic discipline of physical education, which can be a major or minor area of study for a bachelor's degree, is the study of human beings engaged in sport and physical activities which serve as expressions of their physical and competitive natures.
2. Courses which relate to teaching physical education or coaching athletic teams in school or recreation programs can be added to academic discipline courses to complete a teaching or coaching specialty for state certification.
3. Finally, a program of courses is provided for the general and professional student to acquire individual skills, attitudes, knowledge, and physical fitness for participation in selected sports and physical activities.

Requirements

Physical Education — B.A. or B.S. Degree

1. Complete the general university requirements and B.A. or B.S. degree requirements.
2. Complete the following background requirements:

	Credits
Chem. 103 or 104 — Contemporary Chemistry	4
Biol. 111-112 — Human Anatomy and Physiology I and II	8
Math. 107 — Elementary Functions or Math 161 — Algebra for Business and Economics or Math 171 — Mathematics for Life Sciences	3

3. Complete the following program (major) requirements:

Required Courses (22 Credits)

P.E. 205 — Introduction to the Human Movement Sciences	2
P.E. 232 — Analysis of Human Movement	3
P.E. 246 — Advanced First Aid	3
P.E. 316 — Motor Development	3
P.E. 405 — Concepts and Design of Physical Fitness Activities	2
P.E. 421 — Physiology of Exercise	4
P.E. 432 — Biomechanics of Physical Performance	4
P.E. 437 — Adapted Programs of Physical Activity	3

Elective Courses (select a minimum of 8 credits)

For Elementary, Secondary, or K-12 Teaching Certification, students are required to complete one winter sport, one individual sport, one team sport, and five electives from the 200 fundamentals series.

P.E. 211 — Fundamentals of Softball	1
P.E. 212 — Fundamentals of Basketball	1
P.E. 213 — Fundamentals of Ice Sports	1
P.E. 214 — Fundamentals of Snow Sports	1
P.E. 215 — Fundamentals of Volleyball	1
P.E. 216 — Fundamentals of Rhythms	1**
P.E. 217 — Fundamentals of Recreational Activities	1**
P.E. 218 — Fundamentals of Soccer	1
P.E. 219 — Fundamentals of Aquatics	1
P.E. 220 — Fundamentals of Wrestling	1
P.E. 221 — Fundamentals of Gymnastics	1**
P.E. 222 — Fundamentals of Track and Field	1**

Elective Courses (select a minimum of 4 courses.)

P.E. 300 — Advanced Techniques of Gymnastics	1
P.E. 302 — Advanced Techniques of Basketball	1
P.E. 303 — Advanced Techniques in Ice Sports	1
P.E. 304 — Advanced Techniques in Snow Sports	1
P.E. 305 — Techniques in Volleyball	1
P.E. 306 — Techniques in Teaching Creative Dance	1**
P.E. 307 — Techniques in Camping and Outdoor Recreation	1**
P.E. 308 — Techniques in Track and Field	1
P.E. 309 — Aquatics Instructor	2
P.E. 310 — Techniques in Teaching Folk and Square Dance	1

Elective Courses (select a minimum of 7 credits)

P.E. 317 — Motor Learning	3
P.E. 321 — Practicum in Physical Education	1*
P.E. 327 — Movement Activities for Children	2*
P.E. 401 — Theory of Basketball	2
P.E. 406 — Methods of Teaching P.E.	3*
P.E. 411 — Sports & Physical Activity in American Society	3**
P.E. 412 — Principles and Problems in Athletic Coaching	3
P.E. 425 — Administration of P.E. and Athletics	3*
P.E. 440 — Prevention and Care of Athletic Injuries	3
P.E. 442 — Evaluation in Physical Education	3*

4. Minimum credits required 130

*Required by the physical education department for those majors who wish to be considered for Elementary, Secondary or K-12 Teaching Certification.
**Required for K-12 Certification.

Elementary or Secondary Teaching Certification:

In addition to the 22 required, 8 elective credits from the 200 (Fundamentals) series, and 4 elective classes from the 300-310 series, students working toward teacher certification with the B.S. or B.A. in Physical Education must complete:

P.E. 321 — Practicum in Physical Education	1
P.E. 327 — Movement Activities for Children	2
P.E. 406 — Methods and Materials in Teaching P.E	3
P.E. 425 — Administration of P.E. and Athletics	3
P.E. 442 — Measurement and Evaluation in Physical Education	3
Total	12

AND the required courses from the Education Department.

K-12 Teaching Certification:

In addition to the 22 required credits, 8 elective credits from the 200 (Fundamentals) series, and 4 elective classes from the 300-310 series, students working toward K-12 teacher certification with the B.S. or B.A. in Physical Education must complete:

P.E. 306 — Techniques in Teaching Creative Dance	1
P.E. 307 — Techniques in Camping and Outdoor Recreation	1
P.E. 321 — Practicum in Physical Education	2*
P.E. 327 — Movement Activities for Children	2
P.E. 406 — Methods of Teaching Physical Education	3
P.E. 411 — Sports and Physical Activity in American Society	3
P.E. 425 — Administration of P.E. and Athletics	3
P.E. 442 — Measurements and Evaluation in Physical Education	3

*Students are required to complete one semester (1 credit) in an approved practicum with elementary school children and one semester (1 credit) of an approved practicum on campus.

AND the following courses required by the Department of Education for certification:

Psy. 240 — Developmental Psychology in Cross-Cultural Perspective	3
Ed. 201 — Introduction to Education	3
Ed. 330 — Diagnosis and Evaluation of Learning	3
Ed. 407 — Reading Strategies for Secondary Teachers	3
Ed. 454 — Student Teaching	12

One course from the following:

Ed. 345 — Sociology of Education	3
Ed. 346 — Structure of American/Alaskan Education	3
Ed. 350 — Communication in Cross-Cultural Classrooms	3
Ed. 380 — Cultural Influences in Education	3
Ed. 450 — Education and Cultural Transmission	3

MINOR in Physical Education:

For a minor in P.E. for a B.A. degree, complete 18 approved credits in Physical Education at the 200-level or above.

Physics

College of Natural Sciences
Department of Physics

Degrees: B.A., B.S., M.S., M.A.T., Ph.D.

Minimum Requirements for Degrees: B.A. — 130 credits; B.S. — 130 credits; M.S. — 30 additional credits; M.A.T. — 36 additional credits; Ph.D. — no fixed credits

The physics department is responsible for the physics, space physics, atmospheric sciences, and the general science programs. See space physics and atmospheric sciences listings for more information on degree requirements in these disciplines.

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 and medicine.

The undergraduate curriculum provides a solid foundation in general physics with emphasis on its experimental aspects. Furthermore, opportunity is given to the physics student to study areas in applied physics such as atmospheric physics, space physics and engineering physics. A student completing this curriculum should be prepared for careers in education and industry, and for advanced work in the fields of physics, applied physics and related sciences.

Requirements

Physics — B.A. Degree

1. Complete the general university requirements and B.A. degree requirements.
2. Complete the following program (major) requirements:

Complete the foundation courses:	Credits
Phys. 113 — Concepts of Physics	1
Phys. 211-212 — General Physics	8
Phys. 213 — Elementary Modern Physics	3

Complete a minor in mathematics, which includes Math. 200-201-202, and 6 credits at the 300-level or above.
Complete 20 additional credits of approved courses in physics.

3. Minimum credits required 130

Physics — B.S. Degree

1. Complete general university requirements and B.S. degree requirements.
2. Complete the following program (major) requirements:

Math. 200-201-202, 302 and 9 additional credits at the 300-level or above.

Phys. 113, 211-212, 213, 311-312-313, 331-332, 411-412, 381, 382, 445 and 462.

3. Minimum credits required 130

Suggested Curriculum for B.S. Degree

First Year

Fall Semester	*16 credits*
Engl. 111 — Methods of Written Communication	3
Math. 200 — Calculus	4
Chem. 105 — General Chemistry	4
Biol. 105 or Geol. 101	4
Phys. 113	1

Spring Semester	*18 credits*
Speech Communication Elective	3
Phys. 211 — General Physics	4
Math. 201 — Calculus	4
Chem. 106 — General Chemistry	4
E.S. 201 — Computer Techniques	3

Second Year

Fall Semester	*18 credits*
Math. 202 — Calculus	4
Phys. 212 — General Physics	4
Engl. 211 — Intermediate Exposition with Modes of Literature or Engl. 213 — Intermediate Exposition	3
Geol. 101 or Biol. 105	4
Humanities/Social Science elective	3

Spring Semester	*16 credits*
Math 302 — Differential Equations	3
Phys. 213 — Elementary Modern Physics	3
Humanities/Social Science electives	6
Math. 314 — Linear Algebra	3
Free electives	1

Third Year

Fall Semester	*16 credits*
Math. 421 — Applied Analysis I	4
Phys. 311 — Mechanics	4
Phys. 331 — Electricity and Magnetism	3
Phys. 381 — Physics Laboratory	2
Humanities/Social Science electives	3

Spring Semester	*16 credits*
Math. 422 — Applied Analysis II	4
Phys. 312 — Mechanics	4
Phys. 332 — Electricity and Magnetism	3
Phys. 382 — Physics Laboratory	2
Humanities/Social Science electives	3

Fourth Year

Fall Semester	*16 credits*
Phys. 411 — Modern Physics	4
Phys. 313 — Thermodynamics	4
Phys. 462 — Optics	4
E.S. 307 — Elements of Electrical Engineering	3
Free elective	1

Spring Semester	*16 credits*
Phys. 412 — Modern Physics	4
Phys. 445 — Solid State Physics	3
E.S. 308 — Instrumentation and Measurement	3
Free electives	6

MINOR in Physics:
A minor in Physics requires 12-16 credits.

Physics — M.S., M.A.T., or Ph.D. Degree

Graduate work is offered in various areas of physics and applied physics including many of the research areas found at the UAF Geophysical Institute. The research program of the Geophysical Institute currently emphasizes investigations of auroral, ionospheric, magnetospheric and space plasma physics, the physics and chemistry of the upper and middle atmosphere, radio wave propagation and scattering, solar-terrestrial relations, and polar meteorology.

A graduate student may designate his/her major field as physics, space physics or atmospheric sciences. He/she will pursue his/her studies under the supervision of an advisory committee which will advise on the course of study to be followed.

For complete information on the graduate programs in physics, see the UAF Graduate Catalog.

Political Science

College of Liberal Arts
Department of Political Science

Degree: B.A.
Minimum Requirements for Degree: 130 credits

The study of political science is the study of man's efforts to create social organizations and processes compatible with our 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.

Students of political science may prepare for teaching or for advanced study in law and the social sciences, or prepare themselves for careers in public service.

Requirements

Political Science — B.A. Degree
1. Complete general university requirements and B.A. degree requirements.
2. Complete the following social science distribution requirements. (May be used to meet general B.A. requirements):

	Credits
Econ. 201-202 — Principles of Economics I and II (may substitute another economics course for Econ. 201 or 202 on the recommendation of adviser)	6
Hist. 131-132 — History of the U.S.	6
Just. 110 — Introduction to Justice or Psy. 101 — Introduction to Psychology or Soc. 101 — Introduction to Sociology	3

3. Complete 30 credits in political science, beyond P.S. 101 including:

Three Credits in Policy & Administration from:

P.S. 102 — Introduction to American Government and Politics	3
P.S. 210 — Alaska Government and Politics	3
P.S. 211 — State and Local Government	3
P.S. 212 — Introduction to Public Administration	3
P.S. 263 — Alaska Native Politics	3

Six Credits in Comparative Politics as follows:

P.S. 201 — Comparative Politics: Methods of Political Analysis	3
Choose one of the following:	
P.S. 202 — Comparative Politics: Contemporary Doctrines and Structures	3
P.S. 310 — The Politics of Post-Industrial States	3
P.S. 311 — Government and Politics of the Soviet Union	3
P.S. 312 — Government and Politics of China	3

Six Credits in International Politics from:

P.S. 321 — International Politics	3
P.S. 322 — International Relations	3
P.S. 437 — American Foreign Policy and National Security	3
P.S. 480 — The United Nations, Model United Nations and International Administration	1-3
P.S. 481 — Geopolitics and the International Environment	3

Three credits in Law and National Government Institutions from:

P.S. 301 — American Presidency	3
P.S. 302 — Congress and Public Policy	3
P.S. 435 — The Supreme Court and the American Legal System	3
P.S. 436 — The Courts and Civil Liberties	3

Six credits in Political Theory from:

P.S. 315 — American Political Thought	3.
P.S. 411 — Classical Political Theory	3
P.S. 412 — Modern Political Theory	3
P.S. 415 — Contemporary Political Theory	3

Six credits in Political Behavior as follows:

P.S. 400 — Political Science Research Methods	3
Choose one of the following:	
P.S. 401 — Political Behavior: Organizations	3
P.S. 402 — Political Behavior: Individuals	3
P.S. 403 — Public Policy	3

MINOR in Political Science
A minor in Political Science requires 15 credits distributed as follows:

	Credits
P.S. 101 — Introduction to American Government and Politics	3
Three credits in policy and administration from the following:	
P.S. 102, 210, 211, 212, or 263	
Three credits in comparative politics from the following:	
P.S. 201, 202,310, 311, or 312	
Three credits in international politics from the following:	
P.S. 321, 322, 437, 480 or 481	3

Three credits in political theory from the following:
P.S. 315, 411, 412, or415 3

Psychology

Rural College
Department of Behavioral Sciences and Human Services

Degrees: B.A., B.S.
Minimum Requirements for Degrees: 120 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

Psychology — B.A. or B.S. Degree
1. Complete the general university requirements and B.A. or B.S. degree requirements.
2. Complete the following departmental core requirements:
Psy. 101 — Introduction to Psychology 3
*Soc. 101 — Introduction to Sociology 3
Psy./Soc. 250 — Introductory Statistics for Behav. Sci 3
Psy. 240 — Develop. Psychology in Cross-Cultural Persp 3
Psy./Soc. 473 — Social Science Research Methods 3
*Anth. 242 — Native Cultures of Alaska 3
3. Complete 21 credits from the following:**
Psy. 210 — Cross-Cultural Psychology 3
Psy. 230 — Psychology of Adjustment 3
Psy. 255 — Foundations of Counseling I 3
Psy. 304 — Personality 3
Psy. 330 — Social Psychology 3
Psy. 345 — Abnormal Psychology 3
Psy. 350 — Comparative Psychology 3
Psy. 356 — Foundations of Counseling II 3
Psy. 370 — Drugs and Drug Dependence 3
Psy. 380 — Human Behavior in the Arctic 3
Psy. 440 — Learning 3
Psy. 445 — Community Psychology 3
Psy. 450 — Experimental Psychology 4
Psy. 460 — Physiological Psychology 4
Psy. 470 — Sensation and Perception 3
Minimum credits required for degree 120

*May be used toward general degree requirements where applicable.
**Courses in this group not used toward the major may be applied toward appropriate general degree requirements.

MINOR in Psychology
Complete 15 credits of psychology courses beyond Psy. 101.

Resource Economics

School of Management
Department of Economics

Degree: M.S.
Minimum Requirements for Degree: 30 additional credits.

The M.S. degree in resource economics program offers a specialization in the economics of natural resources with emphases in a variety of specific fields possible through interdisciplinary elective courses and thesis research, e.g., fisheries, wildlife management, land resources management, agriculture, oil and minerals, water resources and forest management.

For complete information on the graduate program in resource economics, see the UAF Graduate Catalog.

Rural Development

Rural College
Department of Rural Development

Degree: B.A.
Minimum Requirements for Degree: 120 Credits

The Department of Rural Development addresses rural/community issues and concerns through a variety of campus and field-delivered academic programs and services. A bachelor of arts in rural development, with a variety of emphasis areas, is the only degree option and it is available on the Bristol Bay, Chukchi, Fairbanks, Interior and Kuskokwim campuses.

Requirements

Rural Development — B.A. Degree
1. Complete the general university requirements and the B.A. degree requirements.*

*The B.A. general degree requirements of 18 credits in any combination of courses at the 100 level or above in both humanities and social sciences, selected from at least three disciplines in each area, with a maximum of 9 credits from any one discipline must contain the following courses:

Social Sciences:
ANTH 242 — Native Cultures of Alaska 3
ANS 310 — Political Economy of ANCSA 3
SOC 405 — Social Change or
ANS 475 — Alaska Native Social Change 3

2. Complete the following program (integrated major/minor) requirements:

Credits

Rural Development Core (30 credits):
RD 300 — Rural Development in a Global Perspective 3
RD 325 — Community Organization and Dev. Strategies 3
ED 338 — Education and Economic Development 3
RD 350 — Community Research and Planning 3
RD 400 — Rural Development Internship 3
RD 450 — Managing Community Development Projects 3
RD 475 — Senior Project 3
RD Elective 6
RD or ED Elective 3

Applied Emphasis (24 credits):
Complete a minimum of 24 elective credits (in addition to any required prerequisites) in one of the following groupings. (These elective credits can also be used to fulfill the humanities, social science, mathematics and logic, or natural science general requirements for the B.A. degree.)

Applied Land Management Emphasis
Designed for individuals interested in becoming involved in the management of village corporation lands.
ALR 101 — Conservation of Natural Resources 3
ALR 251 — Introduction to Forest Systems 3
ALR 380 — Soils 3
ALR 401 — Natural Resources Legislation 3
ALR 430 — Land Use Planning 3
ALR 450 — Forest Management 3
ANS 425 — Federal Indian Law and Alaska Natives 3
BIOL 104 — Natural History of Alaska 3
BIOL 271 — Principles of Ecology 4
BA 100 — Introduction to Data Processing and BASIC 3
ECON 235 — Intro. to Natural Resource Economics 3
GEOS 101 — The Dynamic Earth 4
WLF 417 — Wildlife Management — Forest and Tundra 2
WLF 419 — Waterfowl and Wetlands Ecology and Management 2
Approved electives ..... 3 or more

Local Government Administration Emphasis
Designed for individuals interested in becoming involved in the administration of small municipal cities and/or IRA Tribal Governments.
ACCT 101 — Elementary Accounting I 3
ACCT 303 — Governmental Accounting 3
ANS 120 — Cultural Differences in Institutional Settings 3
ANS 425 — Federal Indian Law and Alaska Natives 3
ANS 475 — Alaska Native Social Change 3
ANTH 305 — Comparative Political and Legal Systems 3
BA 100 — Introduction to Data Processing and BASIC 3
BA 301 — Processes of Management 3
PS 101 — Intro. to American Government and Politics 3
PS 210 — Alaska Government and Politics 3
PS 212 — Introduction to Public Administration 3
SOC 407 — Formal Organizations 3
SPC 330 — Intercultural Communication 3
SPC 335 — Organizational Communication 3
Approved electives ..... 3 or more

Village Corporation Management Emphasis
Designed for individuals interested in becoming involved in the management of ANCSA village corporations and related community-based enterprises.

ACCT 101 — Elementary Accounting I	3
ACCT 102 — Elementary Accounting II	3
ANTH 306 — Economic Anthropology	3
ANS 415 — Comparative Economic Development Processes	3
ANS 425 — Federal Indian Law and Alaska Natives	3
ANS 475 — Alaska Native Social Change	3
BA 100 — Introduction to Data Processing and BASIC	3
BA 151 — Introduction to Business	3
BA 331 — The Legal Environment of Business	3
ECON 111 — Economics of Rural Alaska (offered only through off-campus program)	3
ECON 137 — The Alaskan Economy	3
SPC 330 — Intercultural Communication	
SPC 335 — Organizational Communication	3
SOC 407 — Formal Organizations	3
Approved electives	6 or more

Community Research and Cultural Documentation
Designed for individuals interested in becoming involved in accessing, organizing and disseminating information at the community level, particularly through community information centers.

ANS 120 — Cultural Differences in Institutional Settings	3
ANS 301 — Native Cultural Heritage Documentation	3
ANS 320 — Language & Culture: Application of Alaska	3
ANS 351 — Practicum in Native Cultural Expression	3
ANS 401 — Knowledge of Native Elders	3
ANS 421 — Analytical Techniques	3
BA 100 — Intro. to Data Proc. & BASIC Lang	3
ED 311 — Audio-Visual Methods and Materials	3
JB 204 — Basic Photojournalism	3
JB 372 — Methods of Instructional Broadcasting	3
LS 201 — Information Resources & Strategies	3
SOC 250 — Intro. Statistics for Behavioral Sciences	3
SOC 473 — Social Science Research Methods	3
SPC 330 — Intercultural Communication	3
SPC 335 — Organizational Communication	3
Approved Electives	3 or More

Community Organization and Service
Designed for individuals who are interested in becoming involved with community level service organizations and programs.

ANS 120 — Cultural Differences in Institutional Settings	3
ANS 425 — Federal Indian Law and Alaska Natives	3
BA 301 — Processes of Management	3
HMSV 201 — Introduction to Human Services	3
HMSV 350 — Foundations of Counseling	3
HMSV 410 — Management of Human Services Programs	3
Psy. 101 — Introduction to Psychology	3
Psy. 210 — Cross-Cultural Psychology	3
Psy. 240 — Developmental Psychology in Cultural Perspectives	3
Soc. 101 — Introduction to Sociology	3
Soc. 201 — Social Problems	3
Soc. 242 — The Family: A Cross-Cultural Perspective	3
Sp.C. 330 — Intercultural Communication	3
Approved electives	3 or more
Minimum credits required	120

Russian Studies

Interdisciplinary

Degree: B.A.
Minimum Requirements for Degree: 130 credits

Requirements

Russian Studies — B.A. Degree
1. Complete general university requirements and B.A. degree requirements.
2. Complete the following program (major) requirements:

Core courses (21-24 credits):	Credits
Approved Anthropology Elective	3
Geog. 306 — Geography of the Soviet Union	3
Hist. 344 — Modern Russia	3
Russ. 301 — Advanced Russian*	3
Russ. 303 — Advanced Russian*	3
Russ. 432 — Studies in Russian Lit. and Culture (twice - 6 cr.) or	
Russ. 432 — Studies in Russian Lit. and Culture (once - 3 cr.) and	
Russ. 387 — Semantics (2 cr.) and	
Russ. 487 — Translation (2 cr.)	6-7

Complete at least 12 credits from the following courses or alternatives as approved by the program advisor:

Geog. 405 — Political Geography	3
Hist. 315 — Europe 1900-1945	3
Phil. 471 — Contemporary Philosophical Prob.	3
P.S. 202 — Comparative Politics: Contemporary Doctrines and Structures	3
P.S. 321 — International Politics	3
P.S. 322 — International Relations	3
3. Minimum credits required	130

*Students must complete two years of Russian language study (Russ. 101-102-201-202) or equivalent as a prerequisite for Russ. 301-303.

MINOR in Russian:
A minor in Russian studies requires 15 credits taken from the core courses and approved by the program adviser.

Science Management

School of Engineering
Department of Engineering and Science Management

Degrees: M.S.
Minimum Requirements for Degrees: 33 credits (beyond a bachelor's degree in a scientific field)

The science management curriculum is designed for graduate scientists 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.

For complete information on the graduate program in Science Management, see the UAF Graduate Catalog.

Social Work

Rural College
Department of Behavioral Sciences and Human Services

Degrees: B.A.
Minimum Requirements for Degrees: B.A. — 120 credits

Graduates in social work qualify for beginning practice positions in child welfare, mental health, services to the aged, family agencies, youth programs, health services, Native corporations, and various other social agencies. Students learn to work with people on a personal level and are placed in a social agency as part of their course work during the senior year. Social work applies knowledge in the behavioral sciences to deal with the emotional and social problems of individuals, families, and communities. The program is offered at the Fairbanks, Chukchi and Northwest campuses.

The curriculum includes a liberal arts base, foundation requirements in the behavioral sciences, and sequences in social policy and services, practice methods, and field instruction. One major emphasis in the major is preparation of the student for social programs that serve rural communities.

The UAF baccalaureate social work program has attained national accreditation with the Council on Social Work Education.

Requirements

Social Work — B.A. Degree
1. Complete the general university requirements and B.A. degree requirements. (Note: Biol. 103 or Biol. 111 must be taken to meet natural science requirement.)

2. Complete the following departmental core requirements:

*Psy. 101 — Introduction to Psychology	3
*Soc. 101 — Introduction to Sociology	3
Soc. 250 — Introductory Statistics for Behav. Sci	3
*Psy. 240 — Develop. Psychology in Cross-Cultural Persp	3
Soc. 473 — Social Science Research Methods	3
*Anth. 242 — Native Cultures of Alaska	3

3. Complete the following courses:

SWK 103 — Social Work in the Human Services	3

SWK 306 — Social Welfare: Policy and Issues 3
SWK 320 — Rural Social Work 3
SWK 442 — Human Behavior and the Social Environment 3
SWK 460 — Social Work Practice I 3
SWK 461 — Practicum in Social Work I 6
SWK 463 — Social Work Practice II 3
SWK 464 — Practicum in Social Work II 6
Soc. 242 — The Family: A Cross-Cultural Perspective 3

4. Complete 9 credits from the following Special Problems areas:
SWK 360 — Child Abuse and Neglect 3
SWK 484 — Seminar in Social Work Practice 3
HMSV 205 — Factors in Health and Disease 3
HMSV 210 — Crisis Intervention 3
HMSV 230 — Alcoholism: Theories of Etiology 3
HMSV 255 — Foundations of Counseling I 3
HMSV 330 — Alcoholism: Treatment and Prevention 3
HMSV 351 — Foundations of Counseling II 3
HMSV 410 — Management of Human Services Programs 3
RD 325 — Community Organization and Development Strategies 3
SOC 310 — Sociology of Later Life 3
Minimum credits required for degree 120

*May be used toward general degree requirements where applicable.

Sociology

Rural College
Department of Behavioral Sciences and Human Services

Degrees: B.A., B.S.
Minimum Requirements for Degrees: 120 credits

Sociology is the study of groups and their influence on personal behavior and culture. It is concerned with social processes that give rise to and shape human language, experience, perception, meaning, and behavior.

Requirements

Sociology — B.A. or B.S. Degree
1. Complete the general university requirements and B.A. or B.S. degree requirements.

2. Complete the following departmental core requirements:
*PSY 101 — Introduction to Psychology 3
SOC 101 — Introduction to Sociology 3
*PSY 240 — Develop. Psychology in Cross-Cult. Persp 3
PSY/SOC 250 — Introductory Statistics for Behav. Sci 3
PSY/SOC 473 — Social Science Research Methods 3
*ANTH 242 — Native Cultures of Alaska 3

3. Complete the following Sociology Core requirements:
SOC 301 — Rural Sociology 3
PSY/SOC 330 — Social Psychology 3
SOC 363 — Social Stratification 3
SOC 402 — Theories of Sociology 3

4. Complete 12 credits from the following:**
SOC 102 — Social Institutions 3
SOC 201 — Social Problems 3
SOC 242 — The Family: A cross-cultural Perspective 3
SOC 307 — Demography 3
SOC 309 — Urban Sociology 3
SOC 310 — Sociology of Later Life 3
SOC 335 — Sociology of Deviant Behavior 3
SOC 370 — Drugs and Drug Dependence 3
SOC 405 — Social Change 3
SOC 407 — Formal Organizations 3
SOC 408 — American Minority Groups 3
RD 325 — Community Org. & Devt. Strategies 3
Minimum Credits required for Degree 120

*May be used toward general degree requirements where applicable.
**Courses from this group not used toward the major may be applied toward general degree requirements where applicable.

MINOR in Sociology:
A minor in Sociology requires 18 credits in sociology including Soc. 101 and 102.

Space Physics

College of Natural Sciences
Department of Physics

Degrees: M.S., Ph.D.
Minimum Requirements for Degrees: M.S. — 30 additional credits; Ph.D. — no fixed credits

For complete information on the graduate programs in space physics, see the UAF Graduate Catalog.

Speech Communication

College of Liberal Arts
Department of Speech and Drama

Degree: B.A.
Minimum Requirements for Degree: 130 credits

The Department of Speech and Drama provides formal course offerings in both Speech Communication and Theater. Coursework in Speech Communication prepares an individual to handle the challenges of communicating effectively in a rapidly changing world. The major and minor program in Speech Communication provide the student with a comprehensive background in the discipline in preparation for employment or further education. Individuals majoring in a wide variety of other disciplines will also find Speech Communication electives to be valuable additions to their programs.

Requirements

Speech Communication — B.A. Degree
1. Complete the general university degree requirements and B.A. degree requirements, including one of the following three courses for the Oral Communication requirement: Sp.C. 121, Sp.C. 131, or Sp.C. 141. *The course completed to meet the University Oral Communication requirement may not be used to meet the requirements of the Speech Communication Major listed in section 2.*
2. Complete a minimum of 30 credits in *approved Speech*Communication courses.
The courses must be distributed as follows:
100 level courses ..... 3 credits
200 level courses ..... 6 credits
300 level courses ..... 12 credits
400 level courses ..... 9 credits

COURSES *Credits*
100 Level
Sp.C. 121 — Fundamentals of Oral Communication-Interpersonal Emphasis 3
Sp.C. 131 — Fundamentals of Oral Communication-Small Group Emphasis 3
Sp.C. 141 — Fundamentals of Oral Communication-Public Speaking Emphasis 3

200 Level
Sp.C. 211 — Voice and Diction 3
Sp.C. 231 — Business and Professional Communication 3
Sp.C. 251 — Argumentation and Debate 3
Sp.C. 261 — Oral Interpretation 3
Sp.C. 282 — Communication Research Methods 3

300 Level*
Sp.C. 320 — Communication and Language 3
Sp.C. 321 — Nonverbal Communication 3
Sp.C. 322 — Interpersonal Communications 3
Sp.C. 330 — Intercultural Communication 3
Sp.C. 331 — Group Communication 3
Sp.C. 335 — Organizational Communication 3
Sp.C. 342 — Advanced Public Speaking 3

400 Level*
Sp.C. 425 — Communication Theory 3
Sp.C. 441 — Persuasion 3
Sp.C. 443 — Rhetorical Theory 3
Sp.C. 475 — Speech Communication in Education and Training 3
Sp.C. 482 — Seminar in Speech Communication 3

3. Minimum credits required 130

*With approval of advisor, an appropriate level Speech Communication course (3 credits) may be used to meet this requirement.

MINOR in Speech Communication:
A minor in Speech Communication requires the completion of 15 credits in Speech Communication courses beyond the courses taken to satisfy the university oral communication requirement. At least 6 of the credits must be at the 300 level or higher. A minor program requires the approval of the Speech Communication faculty in advance of declaring the minor, preferably no later than the first semester of the student's junior year.

Statistics

College of Liberal Arts
Department of Mathematical Sciences

Degree: B.S.
Minimum Requirements for Degree: 120 credits

Statistics is a collection of methods for making decisions or estimating unknown quantities from incomplete information. Statistical techniques are useful, for example, in estimating plant, animal and mineral abundances; forecasting social, political and economic trends; planning field plot experiments in agriculture; performing clinical trials in medical research; and maintaining quality control in industry. Employment opportunities are excellent for statisticians in many of these areas of application.

The curriculum for the B.S. in statistics provides a strong mathematics and statistics background and integrates this with an area of application. The program allows considerable flexibility in the choice of the area of application.

The statistics program is administered by the Department of Mathematical Sciences. In addition to the B.S. in statistics, the department offers a bachelor's degree in mathematics with an emphasis in statistics. A minor in statistics is also available.

Requirements

Statistics — B.S. Degree
1. Complete the general university requirements and B.S. degree requirements.*

2. Complete the following program (major) requirements:

A. Statistics Core	*44 Credits*
Math. 200, 201, 202 — Calculus	12
Math. 210 — Calculus and the Computer	1
Math. 211 — Linear Algebra and the Computer	1
Math. 314 — Linear Algebra	3
Math. 371 — Probability	3
Math. 408 — Mathematical Statistics	3
C.S. 201 — Computer Programming	3
Stat. 301 — Elementary Probability and Statistics	3
Stat. 351 — Statistical Computing Packages	2
Stat. 401 — Analysis of Experimental Design and Regression	4
Stat. 498 — Senior Project	3

Choose two of the following:	*6 Credits*
Stat. 431 — Applied Nonparametric Statistics	3
Stat. 461 — Applied Multivariate Statistics	3
Math. 460 — Mathematical Modeling	3
Stat. 402 — Scientific Sampling	3
Stat., Math. or statistical discipline oriented course approved by the statistics program chairperson	3

Area of Application *24 Credits*
A minimum of 24 credits, including 6 upper division, in a single discipline in which a UAF undergraduate degree is offered (excluding mathematics). Joint approval in writing is required from the department head in the area of application and the statistics adviser.**

3. Minimum credits required 120

*Credits received in the area of application may reduce the number of required credits in the general distribution requirements of humanities/social science and science. Engl. 312 must be completed as the second course in the written communication requirement.

**Examples of programs for areas of application for biology, wildlife, geology and economics are available. Other areas of application are available.

Minor in Statistics:
Complete the following:

Stat. 301 — Elementary Probability and Statistics	3
Stat. 401 — Experimental Design and Regression	3
Math. 371* — Probability	3
Math. 408 — Mathematical Statistics	3
Approved credits (Examples: Any other Stat. course; statistics related courses such as B.A. 360, B.A. 684, Geos. 430, Econ. 326, Anth. 421, etc.)	3

*Math. 371 requires Math. 200-201-202 as prerequisites.

(A minor in statistics may be used with a major in mathematics as long as there is no double-counting of courses in both the major and minor.)

Theater

College of Liberal Arts
Department of Speech and Drama

Degree: B.A.
Minimum Requirements for Degree: 130 credits

The Department of Speech and Drama provides formal course offerings in both Speech Communication and Theater. The program in Theater is structured to familiarize students with the theory and practice applicable to all aspects of theatrical production. With a variety of career options open to theater majors, the program's coupling of classroom study with a substantial schedule of productions is designed to prepare the student pursuing the major or minor for employment or further education. In addition, theater classes and productions are open to the participation of all students and provide unique opportunities for creative expression and development when coupled with other programs.

Students pursuing a major or minor in theater are encouraged to work closely with a theater faculty member in arranging their individual program of study, including appropriate courses in related disciplines.

Requirements

Theater — B.A. Degree
1. Complete the general university requirements and B.A. degree requirements.
2. Complete the following program (major) requirements:
A. Complete a minimum of 45 credits in theater and stipulated related courses as specified below, including the following foundation courses:

	Credits
Thr. 121 — Fundamentals of Acting	3
Thr. 241 — Basic Stagecraft	3
Thr. 331 — Fundamentals of Stage Direction	3
Thr. 354 — Costume Construction and Design	3
Thr. 411 — Theater History I or Thr. 412 — Theater History II	3

B. Complete the following:
1. A minimum of two courses from:
Thr. 221 — Intermediate Acting (3)
Thr. 225 — Movement for the Actor (3)
Thr. 321 — Advanced Acting I (3)
Thr. 325 — Theater Speech (3)
Thr. 351 — Makeup for Theater (3)
Thr. 421 — Advanced Acting II (3) 6
2. A minimum of two courses from:
Thr. 341 — Intermediate Stagecraft (3)
Thr. 343 — Scene Design (3)
Thr. 347 — Lighting Design (3)
Thr. 355 — History of Stage Costume (3) 6
*3. A minimum of two courses from:
Engl. 422 — Shakespeare: History Plays and Tragedies (3)
Engl. 425 — Shakespeare: Comedies and Non-Dramatic Poetry (3)
Engl. 445 — 20th Century Drama: Chekhov to Ionesco (3) 6
*4. A minimum of one course from: 3
Art 261 — History of World Art
Art 262 — History of World Art
Mus. 123 — Experiencing Music
Mus. 124 — Music in World Cultures
*5. A minimum of one course from: 2-3
Art 105 or 106 — Beginning Drawing
J-B 215 — Audio Production
J-B 316 — Television Production
E.S. 101 — Graphics (2 cr.)
PER. 100 — Modern Dance, Fencing, Gymnastics (1 cr. each)
Sp.C. 261 — Oral Interpretation
Sp.C. 211 — Voice and Diction
F.L. 110 — Pronunciation of French, German, Italian and Spanish
6. A minimum of two courses from: 6
Additional course(s) from 1,2, and 3 above

Office of the Dean

UNIVERSITY OF ALASKA FAIRBANKS

School of Agriculture and Land Resources Management
Fairbanks, Alaska 99775-0100 • (907) 474-7083

M E M O

TO: GAYLE GREGORY, Admissions and Records

FROM: Carla A. Kirts, Academic Advisor, SALRM

THROUGH: James V. Drew, Dean JVD

DATE: August 21, 1989

SUBJECT: ALR 251/350 and WLF 201/301 Petitions

Please consider the following two course substitutions as standard petitions for all majors in Natural Resources Management (general, forestry and agricultural options):

1) ALR 251 replaces ALR 350:
ALR 350 no longer exists; ALR 251 is its official replacement;

2) WLF 201, 2 credits, replaces WLF 301, 3 credits:
WLF 301 no longer exists; WLF 201 is its official replacement.

Thank you for your attention to this matter. This will prevent us from having to process a number of petitions.

CAK/clw

GENERAL REQUIREMENTS INFORMATION

Only designated courses may be used to satisfy distribution requirements for Humanities, Social Sciences, Natural Sciences, and Mathematics. These courses are indicated in the Catalog. Not all courses are included in these categories; the general areas that are marked with an "*" should be checked with the Catalog information.

Humanities

* Alaska Native Language
* Alaska Native Studies
  Art
  Danish
* English
* Eskimo
  French
  German
  Humanities
  Japanese
* Journalism/Broadcasting
* Linguistics
* Music
  Philosophy
  Political Science (411 only)
  Russian
  Spanish
* Speech Communication
  Theater

Social Sciences

* Alaska Native Studies
* Anthropology
* Economics
* Geography
  History
* Justice
* Military Science
* Political Science
* Psychology
* Sociology
* Speech Communication

Natural Sciences

* Anthropology
x Biology
  Botany
x Chemistry
* Geography
x Geology
  Geophysics
  Marine Science (111 only)
x Physics

"x" denotes courses which fulfill B.S. degree requirements

Thr. 211 — Theatre Appreciation
Thr. 413 — Playscript Analysis
Thr. 435 — Advanced Directing
A second semester of Theater History
(411 or 412, which ever was not taken to meet the requirement in A, above)
An individual study in theater
7. Minimum credits required..... 130

*May be used to meet general degree requirements where applicable.

MINOR in Theater:

A minor in Theater requires 18 credits in theater courses including the following:

Thr. 121 — Fundamentals of Acting
Thr. 211 — Theater Appreciation Thr. 241 — Basic Stagecraft

No more than 3 credits in theater practicum may be applied to the minor. The minor program requires the approval of a member of the theater faculty in advance of formally declaring the minor, preferably no later than the first semester of the junior year.

Production Participation Requirement

Majors and minors in theater are expected to participate actively, extensively and continuously in the production activities of the program throughout their enrollment as majors or minors at the university. Typically, this means that a major is expected to work on some aspect of every major production and a minor on approximately half the major productions. Failure to meet the department's expectations with respect to such participation will be considered in approving students for graduation. A student whose failure to fulfill this expectation is, in the view of the theater faculty, jeopardizing his/her future graduation approval and will be notified of this situation, and for this purpose each student's progress in the program will be reviewed annually toward the end of each academic year. Theater majors may take theater practicum for elective credit, but it will not be counted in the credit total for the major.

Welding

School of Career and Continuing Education
Department of Trade and Industry

Special training programs

Welding is an important industrial skill with applications in agriculture, mining, transportation, aviation, oil and gas, and construction. Training ranges from welding basics to advanced pipe and metal plate fabrication. Classes are kept small in order to offer hands-on training and maximum student-instructor interaction. Advanced students may work toward A.W.S. certification or pursue advanced projects.

Wildlife Management

College of Natural Sciences
Department of Biology and Wildlife

Degrees: B.S., M.S., Ph.D. (interdisciplinary)
Minimum Requirements for Degrees: B.S., 130 credits; M.S., 30 additional credits

The undergraduate curricula in the program in wildlife are intended to provide basic education and training. Two options are available: a wildlife research biologist option and a wildlife management biologist option. The research biologist option is designed for those students whose objective is to undertake the field and laboratory research needed to provide additional information on the workings of wild animal populations, the condition of their habitat, and habitat-animal relationships. The management biologist option is designed for those students whose primary interests involve the interpretation, application, or dissemination of research findings, rather than their acquisition. That option is appropriate for those students contemplating careers in wildlife agency administration, in developing and implementing wildlife management plans and in public information and education. The curricula in both options provide 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, the Alaska Cooperative Fishery Research Unit and 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.

Requirements

Wildlife Management — B.S. Degree
(Research Biologist Option)
1. Complete the general university requirements.
2. Complete the following degree and program (major) requirements:

Courses	*Credits*
ALR 101 — Conservation of Natural Resources	3
ALR 380 — Soils	3
ALR 400 — Natural Resource Policies *or*	
ALR 401 — Natural Resource Legislation	3
STAT 301 — Elementary Probability and Statistics	3
STAT 402 — Scientific Sampling	3
BIOL 105-106 — Fundamentals of Biology	8
BIOL 205 — Vertebrate Anatomy *or* BIOL 317 — Comp. Anatomy	3-4
*BIOL 210 — Animal Physiology	4
*BOT 239 — Plant Form and Function	4
BIOL 271 — Principles of Ecology	4
BOT 331 — Systematic Botany	4
BIOL 362 — Principles of Genetics	4
BIOL 425 — Mammalogy	3
BIOL 426 — Ornithology	3
BIOL 471 — Population Ecology	3
CHEM 105-106 — General Chemistry	8
ENGL 111 — Methods of Written Communication	3
ENGL 213 — Intermediate Exposition	3
ENGL 314 — Technical Writing *or* ENGL 414 — Research Writing	3
MATH 272-273 — Introduction to Calculus for the Life Sciences	6
PHYS 103 — College Physics	4
SPC 141 — Fund of Oral Comm: Public Speaking	3
WLF 101 — Survey of Wildlife Sciences	1
WLF 201 — Wildlife Management Principles	2
WLF 303 — Wildlife Management Techniques	3
WLF 360 — Nutrition and Physiol Ecology of Wildlife	3
WLF 410 — Wildlife Populations and Their Management	3
BIOL 473 — Limnology	3
WLF 420 — Wildlife Policy and Administration	3
CS 201 — Computer Programming	3
Take at least 2 of the following:	
WLF 305 — Concepts of Animal/Wildlife Diseases	3
WLF 417 — Wildlife Management: Forest and Tundra	2
WLF 419 — Waterfowl and Wetlands Ecology and Management	3
BIOL 472 — Communities and Ecosystems	2

In addition:
1. Complete the remainder of the B.S. social sciences/humanities requirement, 9 credits.
2. Complete sufficient electives to bring total to 130 credits.
3. Bachelor of science candidates are strongly urged to obtain work experience in wildlife-related positions with public resource agencies or private firms. Faculty members can help students contact potential employers.

*Note prerequisite.

Wildlife Management — B.S. Degree
(Management Biologist Option)

1. Complete the general university requirements.
2. Complete the following degree and program (major) requirements:

Courses	*Credits*
ALR 101 — Conservation of Natural Resources	3
ALR 380 — Soils	3
ALR 400 — Natural Resource Policies or ALR 401 — Natural Resource Legislation	3
ALR 430 — Land-Use Planning	3
STAT 301 — Elementary Probability and Statistics	3
STAT 402 — Scientific Sampling	3
BIOL 105-106 — Fundamentals of Biology	8
BIOL 205 — Vertebrate Anatomy	3
*BIOL 210 — Animal Physiology	4
*BOT 239 — Plant Form and Function	4
BIOL 271 — Principles of Ecology	4
BOT 331 — Systematic Botany	4

BIOL 362 — Principles of Genetics 4
BIOL 425 — Mammalogy
or BIOL 426 — Ornithology 3
BIOL 471 — Population Ecology 3
CHEM 105-106 — General Chemistry 8
ECON 235 — Introduction to Natural Resource Economics 3
ENGL 111 — Methods of Written Communication 3
ENGL 213 — Intermediate Exposition 3
ENGL 314 — Technical Writing or
ENGL 414 — Research Writing 3
MATH 272-273 — Introduction to Calculus for the Life Sciences 6
PHYS 103 — College Physics 4
SPC 141 — Fund of Oral Comm: Public Speaking 3
WLF 101 — Survey of Wildlife Sciences 1
WLF 201 — Wildlife Management Principles 2
WLF 410 — Wildlife Populations and Their Management 3
WLF 303 — Wildlife Management Techniques 3
BIOL 473 — Limnology 3

In addition:
1. At least 9 credits must be completed from this group:
GEOG 302 — Geography of Alaska 3
GEOG 402 — Man and Nature 3
**JB 102 — Broadcasting and Society 3
**JB 301 — Basic Newsgathering and Processing 3
**JB 203 — Basic Photography 3
JB 311 — Magazine Article Writing 3

*Note prerequisite.
**Maximum of 3 credits may be included in the required 9.

PHIL 322 — Ethics 3
PS 101 — Introduction to American Government 3
PS 201 — Comp. Politics: Methods of Political Analysis 3
PS 263 — Alaska Native Politics 3
PS 301 — Public Admin. in Political Process 3
PSY 101 — Introduction to Psychology 3
SOC 101 — Introduction to Sociology 3
SOC 102 — Introduction to Sociology 3
SOC 309 — Urban Sociology 3

2. At least 1 of the following courses must be included:
ALR 460 — Principles Outdoor Recreation Management 3
ALR 450 — Forest Management 3
ALR 370 — Introduction to Watershed Science 3

3. At least 2 of the following courses must be included:
WLR 417 — Wildlife Management — Forest and Tundra 2
WLR 419 — Waterfowl and Wetlands Ecology and Management 3
FISH 429 — Introduction to Fisheries Science 3
FISH 430 — Fisheries Management 3
WLF 436 — Introduction to Aquaculture 3
WLF 305 — Concepts of Animal/Wildlife Disease 3
BIOL 472 — Communities and Ecosystems 3

4. Complete sufficient electives to bring total credits to 130.
Bachelor of science candidates are strongly urged to obtain work experience in wildlife-related positions with public resource agencies or private firms. Faculty members can help students contact potential employers.

The wildlife and fisheries program 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, wildlife and fisheries program. The procedure to be followed in applying for admission to graduate study is outlined in the section on Graduate Admissions 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 Fairbanks, Fairbanks, Alaska. Applications for these assistantships should be sent to the unit leader; such applications are supplementary to the application for admission for graduate study.

Wildlife Management — M.S. or Ph.D. Degree

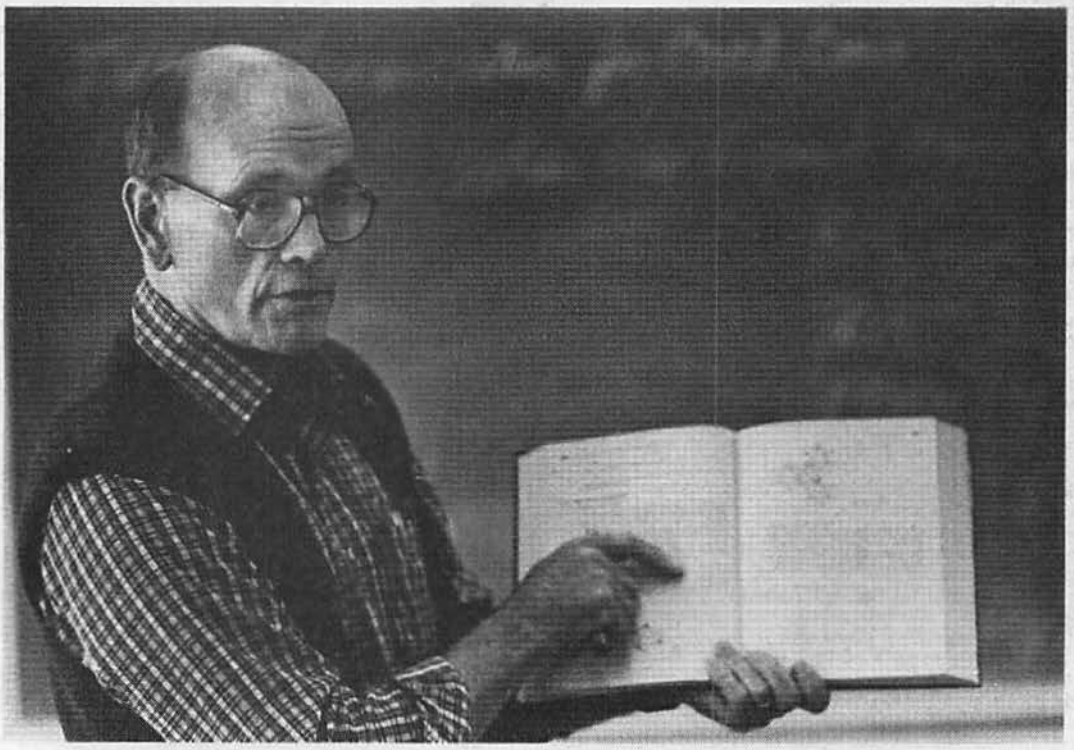
For complete information on the graduate programs in wildlife management, see the UAF Graduate Catalog.

Zoology

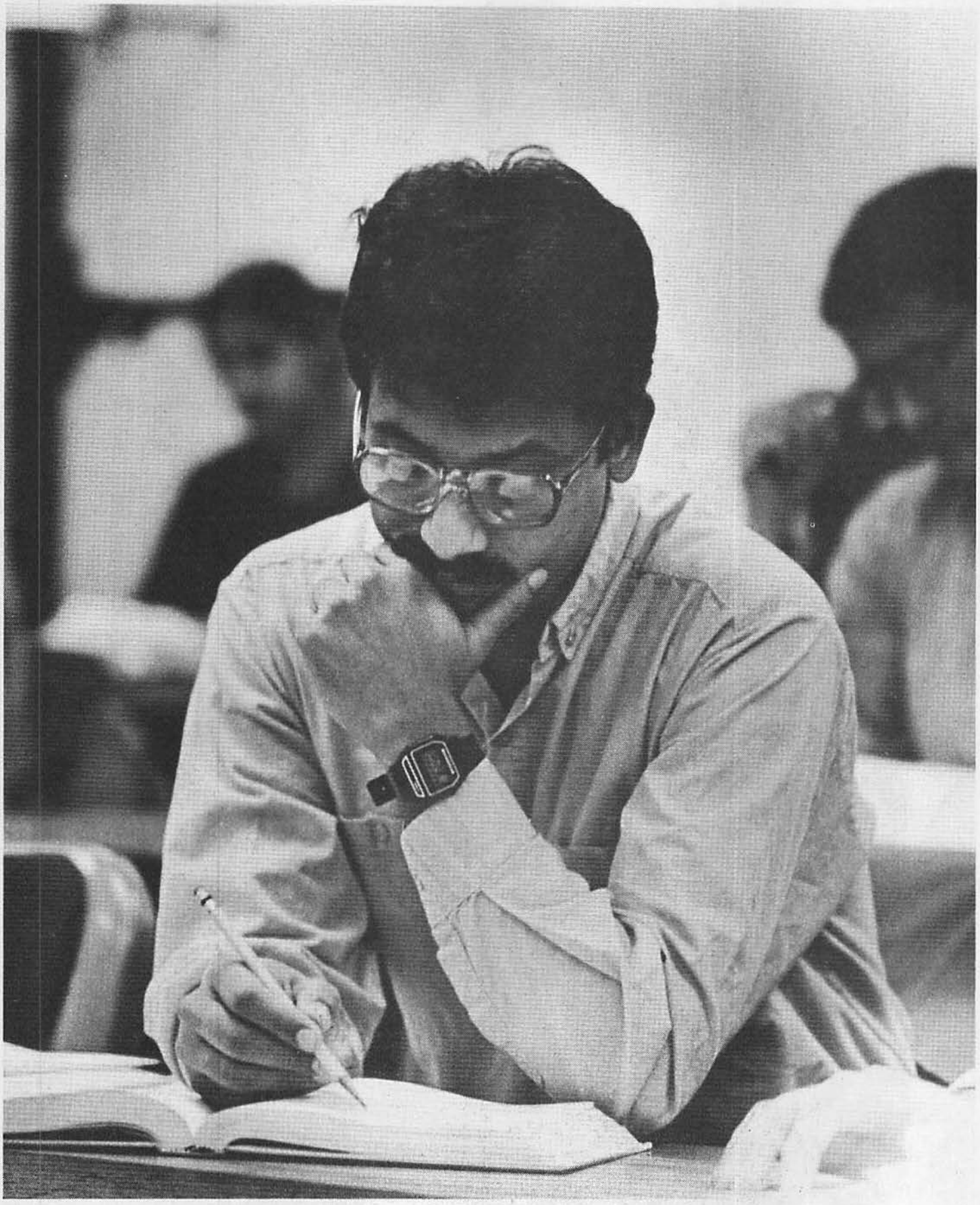
College of Natural Sciences
Department of Biology and Wildlife

Degrees: M.S., Ph.D. (Interdisciplinary)
Minimum Requirements for Degrees: M.S. — 30 additional credits

For complete information on the graduate programs in zoology, see the UAF Graduate Catalog.



Dr. Dan Hawkins, a UAF professor for more than 20 years, lectures to a chemistry class.



Moqueet Syed, an engineering management student, contemplates a particularly difficult problem.

Robert Duncan from Metlakatla concentrates on his performance at the Festival of Native Arts, which is held each year at UAF.

Course Descriptions

In this section of the University of Alaska Fairbanks catalog full course information for all undergraduate level courses is included. Titles, credits and frequency of offering only are indicated for graduate level courses. *(See the UAF Graduate Catalog for complete graduate course information.)*

Unless otherwise indicated, course frequency refers to the offering of courses at the Fairbanks campus of the University of Alaska Fairbanks. The courses listed in this catalog are not offered at all UAF sites but could be offered if demand warrants and qualified faculty are available.

Courses are regularly offered at the Aleutians Campus at Unalaska, Bristol Bay Campus at Dillingham, Chukchi Campus at Kotzebue, Kuskokwim Campus at Bethel and Northwest Campus at Nome. In the Interior Campus, courses are available at Fort Yukon, Galena, McGrath, Nenana and Tok. Courses are offered at Delta Junction/Ft. Greely, Eielson AFB and Ft. Wainwright through the UAF School of Career and Continuing Education. Information about the frequency of offerings of courses at these sites can be obtained from the local UAF representative.

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 111 is given for first-year students and ENGL 318 is given for third-year students. Freshman and sophomore students are cautioned to register for upper division (300 and 400) level courses only if they have had adequate preparation and background to undertake advanced study in the field in which those courses are offered.

000-049 — Non-credit courses

050-099 — Developmental courses
Developmental courses are preparatory courses which do not apply to associate of arts, baccalaureate or graduate degrees. Credits earned in these courses may be applied toward associate of applied science degree requirements, with approval of program or department head.

100-299 — Lower-division courses

300-499 — Upper-division courses
Freshman and sophomore students may be required to obtain special permission to take 300 and 400 level courses unless such courses are required in the first two years of their curriculum as printed in this catalog.

500-599 — Post-baccalaureate courses
Post-baccalaureate courses are considered professional and specialized. Such courses are not interchangeable with 600 level courses for graduate degree programs.

600-699 — Graduate courses
A few well qualified undergraduates may be admitted to graduate courses with the permission of the head of the department in which the course is offered.

Special or Reserved Numbers — Courses identified with numbers ending in -92 are seminars; ending in -93 are special topics courses, approved to be offered only during one academic year; -94, approved trial courses; -95, special topics summer session courses, offered only during the summer; -97 indicates individual study -98, individual research; -99, thesis.

Courses identified with these special or reserved numbers may be available at all levels (i.e., 193, 293, 393, etc.) at the discretion of any department, although offerings above the level of approved programs must be approved in advance by the Vice Chancellor for Academic Affairs (e.g., 600-level offerings in areas without approved graduate programs). These courses may be repeated for credit.

Course Credits

One credit represents satisfactory completion of 800 minutes of lecture or 1600 or 2400 minutes of laboratory, whichever is appropriate. Credit hours may not be divided, except one-half credit hours may be granted at the appropriate rate. For short courses and classes of less than one semester in duration, course hours may not be compressed into fewer than *three days per credit.*

Following the title of each course, the figures in parentheses indicate the number of lecture and laboratory hours the class meets each week for one semester. The first, lecture hours; the second, laboratory. For example (2+3) indicates that a class has two hours of lecture and three of laboratory work week.

The number of credits listed is for each semester. Thus "3 credits" means three credits may be earned.

Credit may not be given more than once for the completion of a course unless the course has been designated as repeatable for credit.

Course Classification Identification

Courses that may be used in satisfying general degree requirements (e.g., Social Science Elective, Written Communication, etc.) are identified in the course description section of this catalog by the following designators:

h — Humanities	o — Oral Communication
m — Mathematics	s — Social Science
n — Natural Science	w — Written Communication

For example, HIST 341, History of Alaska (3+0)s may be utilized to satisfy the "social science elective" requirement. ENGL 111, Methods of Written Communication (3+0)w may be used to meet the written communication general degree requirement.

Special topics courses are not given course classifications.

Note: Courses which are offered only every other year are indicated by the specific year in which they are next scheduled. Courses with no year scheduled are offered every year, except as noted.

Note: All courses are not offered at all locations of the University of Alaska Fairbanks. Check the local class schedule for course offerings at other sites.

Accounting

Admittance to upper division School of Management courses will be granted only to students with junior standing or above. Others will be admitted only with the written permission of the appropriate department head.

ACCT 101 3 Credits Fall and Spring
Elementary Accounting (3+0)
An introduction course in accounting concepts and procedures for service businesses and for merchandising businesses owned by a single proprietor.

ACCT 102 3 Credits Fall and 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: ACCT 101.)

ACCT 103 3 Credits As Demand Warrants
Principles of Accounting III (3+0)
Accounting in a manufacturing business and cost accounting. Emphasizes taxes as they apply to business and corporations. (Prerequisite: ACCT 101 and 102.)

ACCT 303 3 Credits Spring
Governmental Accounting (3+0)
Principles and operation of fund accounting; financial reporting, budgetary control for governmental, municipal and non-profit organizations. (Prerequisite: ACCT 101.)

ACCT 310 3 Credits Fall
Income Tax (3+0)
A study of federal and state income taxes relating primarily to the individual residing in Alaska and an introduction to corporate income taxation. The course entails tax reporting, planning, and research. (Prerequisite: ACCT 102 or permission of instructor.)

ACCT 316 3 Credits Spring
Accounting Information Systems (3+0)
The design and analysis of accounting systems for business entities in various industries. Internal control for the business, data processing and its relationship to accounting systems examined. Materials fee: $20.00. (Prerequisite: ACCT 102.)

ACCT 323 3 Credits As Demand Warrants
Petroleum Accounting (3+0)
Financial reporting and accounting for the petroleum industry with an emphasis on the exploration, development and production phases of oil and gas operations. (Prerequisites: ACCT 101 and 102 or permission of instructor.)

ACCT 342 3 Credits Spring
Managerial Cost Accounting (3+0)
A cost accounting course with a managerial emphasis focusing on cost-volume-profit analysis, job order and process costing, joint costs, by-products, inventory costing alternatives, systems design, responsibility accounting, profit planning, standard costs, and flexible budgeting. This course is designed for accounting majors. (Prerequisite: ACCT 102.)

ACCT 352 3 Credits Fall and Spring
Management Accounting (3+0)
A managerial accounting course focusing on business policy profit planning, resource planning, control concepts, reporting for management control, and the impact of public reporting on management decisions. (Prerequisites: ACCT 101 and ACCT 102.)

ACCT 361 3 Credits Fall
ACCT 362 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. (Prerequisite: ACCT 102.)

ACCT 401 3 Credits Fall
Advanced Accounting (3+0)
A thorough study of accounting for parent-subsidiary relationships, partnerships, and fiduciaries. The principles of fund accounting will be introduced and international accounting problems will be emphasized. (Prerequisite: ACCT 362.)

ACCT 403 3 Credits Spring
Advanced Taxes (3+0)
A study of federal income tax for all entities, gift, estate, and payroll taxes. The course entails tax research, tax planning, and tax reporting for domestic and foreign tax payers. (Prerequisite: ACCT 310.)

ACCT 404 3 Credits Fall
Controllership and International Accounting (3+0)
A study of the controllership function in contemporary organizations with emphasis upon international accounting in multinational enterprises and selected cases in management accounting for governmental entities. (Prerequisites: All 300 level accounting major requirements; BA 325, 343 and 360; and ACCT 401 which may be taken concurrently.)

ACCT 405 3 Credits Spring
Contemporary Issues in Accounting (3+0)
A study of current developments in financial and managerial accounting theory and research. Relevant court cases, SEC rulings, FASB and AICPA publications, and academic accounting research will be emphasized. (Prerequisite: ACCT 401.)

ACCT 452 3 Credits Fall
Auditing (3+0)
A study of the procedures for verification of financial data and the professional standards applicable to the auditor's examination of financial statements and his expression of opinion relative to them. (Prerequisite: ACCT 362.)

ACCT 471 3 Credits As Demand Warrants
Tax Planning and Research (3+0)
Tax planning and research primarily for business organizations. Tax planning for estates, trusts, and individuals will be examined. The course is designed for tax practitioners as well as for students without work experience in taxation. (Prerequisites: ACCT 310 and 403 or permission of instructor.)

ACCT 472 3 Credits Spring
Computer Control and Advanced Auditing (3+0)
An examination of advanced auditing theory and practice, including audit techniques and internal control of computer systems. The course is designed for auditor practitioners as well as for students without field experience in auditing. Materials Fee: $20.00. (Prerequisites: ACCT 316 and ACCT 452. This course assumes prior exposure to auditing and information systems.)

ACCT 473 3 Credits Fall
Applied Systems Design (3+0)
The development and implementation of a computer-based accounting information system for a small business or not-for-profit entity. Materials Fee: $20.00. (Prerequisites: ACCT 316, 342 and 362.)

ACCT 481 1 Credit As Demand Warrants
Personal Tax Planning (1+0)
The course will concern personal tax planning rather than tax preparation. The course will focus on the provisions of tax law affecting the individual taxpayer. (Prerequisites: Upper division standing, permission of instructor.)

ACCT 482 1 Credit As Demand Warrants
Business Tax Planning (1+0)
The course will concern business tax planning rather than tax preparation. The course will focus on applicable tax credits, business deductions, profit sharing plans, and various state taxes. (Prerequisites: Upper division standing or permission of instructor.)

ACCT 483 1 Credit As Demand Warrants
Estate Tax Planning (1+0)
The course will entail estate tax planning. The course will focus on gift, estate, and social security taxes. (Prerequisites: Upper division standing or permission of instructor.)

ACCT 602 3 Credits Spring
Financial Accounting Concepts for Administrators (3+0)

ACCT 623 3 Credits As Demand Warrants
Land Valuation and Petroleum Accounting (3+0)

ACCT 650 3 Credits Spring
Management Accounting Seminar (3+0)

Agriculture and Land Resources

RESOURCES MANAGEMENT

ALR 101 3 Credits Fall
Conservation of Natural Resources (3+0)
Consideration of natural resources including discussion of their biological and physical nature, social and economic aspects of use, conflicts of use, and alternative means for conservation. Majors in all fields are welcome. (Prerequisite: Placement in ENGL 111.)

ALR 102 1-3 credits Fall and Spring
Practicum in Natural Resources Management
An individual study opportunity providing practical experience in some field related to natural resources management. This supervised, occupational experience may take place on a farm, in a greenhouse, in a managed forest, with an agency or business, or in another approved location. (Prerequisite: Enrollment limited to Natural Resource Management majors only.)

ALR 201 3 Credits Fall
Processes of Natural Resources Management (3+0)
An introductory course in natural resources management institutions and processes. Emphasizes public lands and resources, but considers private firms and native regional corporations as well. (Prerequisites: ALR 101 and at least sophomore standing.)

ALR 220 3 credits Spring
Elements of Information Transfer for Natural Resource Managers (3+0)
Introduction to information transfer processed used by natural resource managers, including principles of the extension processes. Identification of, and networking with various publics, with emphasis on natural resources-orientated agencies; tools, techniques (formal and informal), and planning strategies for promoting effective info-transfer; theory and practical applications. (Prerequisites: ALR 101 and a speech communications course or permission of instructor.)

ALR 300 1-3 Credits Fall, Spring, Summer
Internship in Natural Resources Management
Supervised programs designed to provide carefully selected upper division or graduate students with practical experience working with government units or agencies in natural resources management. Opportunities to apply theories and practical application, observe procedures and operations of the agencies, and become better prepared for professional employment. (Prerequisite: ALR 101, at least upper division standing, and permission of instructor.)

ALR 310 3 Credits Spring
Agricultural Concepts and Techniques (3+0)
Concepts and techniques of agriculture in its broadest sense as related to past, present, and future cultures; food and fiber production; uses of wild and domestic plants and animals; esthetics; and quality and protection of the environment. (Prerequisite: BIOL 105, 106; CHEM 105, 106.)

ALR 360 3 Credits Alternate Spring
Outdoor Recreation Planning (3+0)
The course develops on the basic theory and practices related to the allocations of natural resources for recreational purposes, including concomitant services related to that use. Macrobehavioral patterns are studied as they influence the allocation process. (Prerequisites: ALR 101 and ECON 235 or equivalent, or with permission of instructor. Next offered: 1989-90.)

ALR 400 3 Credits Alternate Spring
Natural Resource Policies (3+0)
The origin and significance of public policies in land, water, forest, wildlife, mineral, petroleum, agricultural and aesthetic resources. Focuses on Alaskan and relevant national issues. (Prerequisites: Upper division or graduate standing. Next offered: 1989-90.)

ALR 401 3 Credits Alternate Spring
Natural Resources Legislation (3+0)
The background and importance of selected federal and Alaskan legislation in land management, resource conservation and environmental arenas. (Prerequisite: Upper division or graduate standing in agriculture, wildlife, fisheries, natural resources management, or related fields, or permission of instructor. Next offered: 1990-91.)

ALR 403 4 Credits Alternate Spring
Managing Food Production Systems (3+3)
The examination of alternative and traditional food production systems in light of changing economic conditions in world markets; emphasis on subarctic areas. Available economic and engineering principles will form the core of the course. Applications include development of a diversified plan for food production. Personal computers will be used in development of budget and cash flows. (Prerequisites: ALR 310, ALR 320, basic economics (can be taken concurrently), and basic knowledge of operation of a personal computer, or permissions of instructor. Next offered: 1989-90.)

ALR 425 2 Credits Spring
Alaska's Reindeer Industry (2+0)
Alaska's reindeer industry will be examined as a practical case in natural resources management. Social, economic, historical, and ecological aspects will be addressed. Emphasis will be placed on (1) the multi-disciplinary nature of natural resource management and planning; and (2) the coordination of agency and private involvement in management of the reindeer industry's resource base. (Prerequisites: ALR 101, at least junior standing or permission of instructor.)

ALR 430 3 Credits Spring
Land-Use Planning (3+0)
History, legal framework, principles, processes, and practices of land use planning. Important Alaskan issues and problems are emphasized. (Prerequisite: Upper division standing.)

ALR 460 3 Credits Fall
Principles of Outdoor Recreation Management (2+3)
Theories, practices, economics, and problems fundamental to the use of land and related natural resources for recreation. (Prerequisite: at least junior standing or permission of the instructor.)

ALR 461 3 Credits Alternate Spring
Interpretive Services (3+0)
Naturalist and other visitor programs in outdoor recreation areas: philosophy, planning, and development of interpretive programs; resources, agencies, users, interpretive media, and program evaluation. (Prerequisites: At least junior standing or permission of instructor. Next offered: 1990-91.)

ALR 462 3 Credits Fall
Alaskan Environmental Education (3+0)
(Same as ED 462)
Environmental concepts, motivational and discovery techniques, and practical skills for utilizing the environment inside and outside the formal classroom in all subject areas. Course content includes information on curriculum materials (K-12), interpretive and audiovisual aids facilities, environmental problem solving and applications of environmental education to situations from the public schools to summer campus, short courses, and workshops for individuals of any age. (Prerequisites: at least junior standing or permission of instructor.)

ALR 630 3 Credits Fall
Planning Theory (3+0)

ALR 631 3 Credits Spring
Planning Practicum (3+0)

ALR 641 3 Credits Alternate Spring
Natural Resources Applications of Remote Sensing (2+3)

ALR 675 3 Credits Alternate Fall
Applied Ecosystem Science (3+0)

ALR 680 3 Credits Alternate Fall
Environmental Decision-Making (3+0)

ALR 690 3 Credits Alternate Fall
Advanced Topics in Resource Management (3+0)

FOREST SCIENCES

ALR 251 3 credits Spring
Silvics and Dendrology (3+0)
The ecological requirements and characteristics of tree species of the Northern Forest and western North American forest; silvical characteristics including range, climate, soils, shade tolerance, growth, and principal enemies. Family and species characteristics essential for identification on sight or with a key are stressed. (Prerequisites: ALR 101 and introductory biology course or permission of instructor.)

ALR 340 3 Credits Spring
Natural Resources Measurements (2+3)
Introduction to the techniques and instrumentations used in the measurement and inventory of natural resources. Measurements used by managers of land, timber, range, wildlife, water, and recreation resources will be discussed. (Prerequisites: junior standing or permission of instructor.

ALR 370 3 Credits Fall
Introduction to Watershed Management (2+3)
Examination of the hydrologic cycle and the influence of land management techniques on water quantity, quality, and timing. Topics of water yield, soil erosion and non-point pollution, snowpack management, and land use alternatives will be discussed. (Prerequisites: BOT 239, and GEOS 101, or permission of instructor.)

ALR 450 3 Credits Alternate Fall
Forest Management (3+0)
Introduction to forest land management for production of goods and services; relation of timber production to other forest land uses; topics include sustained yield, allowable cut, management planning inventory, valuation. (Prerequisites: ALR 350, ECON 235, or permission of instructor. Next offered: 1990-91.)

ALR 451 3 credits Alternate Spring
Regeneration and Silviculture of Northern Boreal Forests (2+3)
An examination of the biological, environmental, silvicultural, and economical considerations for the successful regeneration and subsequent management of the northern boreal forest. Designed particularly for persons with interest in land management, including timber management, woodlot management, habitat manipulation, site rehabilitation and streamside management. (Prerequisites: ALR 350, BIOL 271, junior standing or permission of the instructor. Next offered: 1990-91.)

ALR 452 3 Credits Alternate Spring
Forest Protection (3+0)
The basic principles and practical management systems for forest protection from fire, insects, and diseases are presented. Emphasis is on understanding the role of these factors in managing forest ecosystems, and problems and techniques particularly important in the forest of high latitudes, especially in Alaska. (Prerequisites: BIOL 105, 106, 271, BOT 239; ALR 350 or instructor's permission. Next offered: 1989-90.)

ALR 453 3 Credits Alternate Fall
Harvesting and Utilization of Forest Products (3+0)
The first half of this course will be an in-depth study of timber harvesting systems including timber cutting, yarding, and transport processes. Both manual and mechanized aspects will be considered. The second half of the course will cover the technology of processing wood into various products including lumber, plywood, veneer, pulp, and energy. (Prerequisites: ALR 101 and 350. Next offered: 1990-91.)

ALR 640 3 Credits Alternate Spring
Simulation and Modeling in Resource Management (3+0)

ALR 670 3 Credits Alternate Fall
Biometeorology (3+0)

ALR 672 2 Credits Alternate Fall
Dynamics of Nitrogen in Forest Ecosystems (2+0)

PLANT AND ANIMAL SCIENCES

ALR 211 3 Credits Alternate Fall
Introduction to Agronomy and Horticulture (2+3)
Principles of plant science as related to production of economic crops, with special attention to those grown in Alaska. (Prerequisite: A general botany course or permission of instructor. Next offered: 1989-90.)

ALR 312 3 Credits Alternate Fall
Introduction to Range Management (3+0)
Applied ecological treatment of soil, plant and grazing animal relationships on uncultivated lands, including discussions on the origin of the discipline, management practices, important rangelands of North America, with emphasis on Alaska's rangelands and grazers. (Prerequisites: BIOL 105, 106, BOT 239 or permission of instructor; ALR 320, 321 recommended. Next offered: 1990-91.)

ALR 313 4 Credits Alternate Spring
Introduction to Plant Pathology (3+3)
An introduction to the field of plant pathology; non-parasitic and parasitic causes of plant diseases; methods of plant infestation and mechanism of plant defenses; epidemiology and disease control. (Prerequisites: BIOL 105 and 106; BOT 239 recommended. Next offered: 1990-91.)

ALR 320 3 Credits Alternate Fall
Introduction to Animal Science (2+3)
Origin, history, and economic significance of breeds of dairy and beef cattle, swine, sheep, and poultry. Discussion of reindeer, bison, and musk-ox. Introduction to management and production systems with special reference to Alaska. (Prerequisite: A course in general biology. Next offered: 1990-91.)

ALR 321 3 Credits Alternate Fall
Applied Animal Nutrition (2+3)
Application of feeding standards and feedstuffs analysis to the nutrition of farm animals. Comparative anatomy of the digestive system of pig, horse, and cow. (Prerequisite: A course in general biology. Next offered: 1989-90.)

ALR 380 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 105.)

ALR 411 3 Credits Alternate Fall
Plant Propagation (2+3)
Principles of plant propagation, including seeds, bulbs, divisions, layers, cuttings, buds, grafts, and rootstocks. Where possible, emphasis will be placed on the propagation of indigenous plants. (Prerequisites: ALR 311 or permission of instructor. Next offered: 1990-91.)

ALR 412 3 Credits Alternate Fall
Field Crop Production (3+0)
Agronomic principles and practices involved in the production, storage, marketing, and utilization of field crops. (Prerequisites: ALR 311. Next offered: 1990-91.)

ALR 420 3 Credits Alternate Spring
Animal Nutrition and Metabolism (3+0)
Nutrition and metabolism of domestic animals; ruminant and monogastric. (Prerequisites: CHEM 105, 106; biochemistry recommended. Next offered: 1989-90)

ALR 480 3 Credits Alternate Fall
Soil Conservation (3+0)
Managing soil to maintain or increase crop productivity while minimizing soil losses from wind and water erosion. (Prerequisites: ALR 380. Next offered: 1989-90).

ALR 607 3 Credits Alternate Spring
Biotechnology (3+0)
(Same as EQE 607)

Airframe and Powerplant

AFPM 111 3 Credits As Demand Warrants
General Airframe and Powerplant (4+0)
Introduction to Airframe and Powerplant Mechanics including shop practices, basic math, applied physics, F.A.A. regulations, basic electricity, aircraft weight and balance, ground operations and servicing, cleaning and corrosion control, and materials and process. Designed to prepare the student for the FAA Mechanics Airframe Structures Written, Oral and Practical Exam. Materials fee: $20.00. (Prerequisite: Meet the experience requirements of FAR 65.77 or permission of the instructor.)

AFPM 145 1 Credit As Demand Warrants
Basic Mathematics (1+0)
A beginning course in Mathematics. The course contains a thorough review of applied and technical mathematics, including common and decimal, fractions and mixed numbers; extracting square roots and raising numbers to a given power; solving ratios, proportions and percentage problems; and performing fundamental algebraic operations as they relate to the construction of aircraft and their engines. (Prerequisite: Admission to A & P Program or permission of instructor.)

AFPM 146 2 Credits As Demand Warrants
Basic Electricity (2+0)
A beginning level course in electrical theory and concepts. The course is directed towards the needs of the aviation mechanic and includes a study of Ohm's law, electrical circuits, diagrams, batteries, and a variety of electrical components. (Prerequisite: Admission to A & P Program or permission of the instructor.)

AFPM 147 0.5 Credits As Demand Warrants
Physics for Mechanics
A study of the principles and applications of mechanics with emphasis placed on levers, sound, fluid and heat dynamics. Basic aircraft structures and aerodynamic principles will be covered. (Course does not fulfill Natural Science requirements for any degree.) (Prerequisite: Admission to A & P Program or permission of instructor.)

AFPM 148 1 Credit As Demand Warrants
Aircraft Drawing
A beginning course designed to build skill and knowledge of basic drafting. The student will learn to use drawings, symbols and schematic diagrams, make sketches of repairs and alterations, and use blueprint information, graphs and charts. (Prerequisite: Admission to A & P program or permission of instructor.)

AFPM 149 0.5 Credits As Demand Warrants
Fluid Lines and Fittings
A practical course covering the study of rigid and flexible fluid lines and fittings, including their fabrication and installation. (Prerequisite: Admission to A & P Program or permission of instructor.)

AFPM 150 2 Credits As Demand Warrants
Materials and Processes (2+0)
This course covers basic shop practices, including the selection, identification and installation of aircraft hardware and materials, precision measuring tools and operations, basic heat treating processes, and all forms of non-destructive inspections. (Prerequisite: Admission to A & P Program or permission of instructor.)

AFPM 151 1 Credit As Demand Warrants
Cleaning and Corrosion Control (1+0)
This course covers the basic aircraft cleaning materials, methods, and an in-depth study of aircraft corrosion control. (Prerequisite: Admission to A & P Program or permission of instructor.)

AFPM 152 1 Credit As Demand Warrants
Federal Aviation Regulations (1+0)
This course provides an overview of the Federal Aviation Regulations as they apply to the maintenance of aircraft. Includes a study of maintenance forms and records, maintenance publications, and the privileges and limitations of aircraft mechanics. (Prerequisite: Admission to A & P program or permission of instructor.)

AFPM 153 1 Credit As Demand Warrants
Weight and Balance (1+0)
A study of weighing procedures, weight, arms, moments, center of gravity computations, and placarding. The student will compute loading an aircraft, completing required forms, and weigh an aircraft. (Prerequisite: Admission to A & P Program or permission of instructor.)

AFPM 154 0.5 Credits As Demand Warrants
Ground Operations & Servicing
This course includes both theory and practice in the starting, moving, servicing, securing, and fueling aircraft. (Prerequisite: Admission to A & P program or permission of instructor.)

AFPM 205 3 Credits As Demand Warrants
Airframe Structures (FAA Test Preparation)(3+0)
Principles, practices, procedures, techniques relating to aircraft wood, dope, fabric finishes, welding, sheet metal, assembly and rigging and inspection. Designed to prepare the student for the FAA Mechanics Airframe Structures Written, Oral and Practical Exam. Materials fee: $20.00. (Prerequisite: Meet the experience requirements of FAR 65.77 or permission of the instructor.)

AFPM 206 2 Credits As Demand Warrants
Airframe System & Components (FAA Test Preparation)(2+0)
A study of aircraft electrical, hydraulic and pneumatic, landing gear, position and warning, aircraft instrument, aircraft fuel, communication and navigation, cabin atmosphere control, and fire protection systems, inspection, checking, troubleshooting. Repair and servicing is also covered. Designed to prepare the student for the FAA Mechanics Airframe Structures Written, Oral and Practical Exam. Materials fee: $20.00. (Prerequisite: Meet the experience requirements of FAR 65.77 or permission of the instructor.)

AFPM 215 2 Credits As Demand Warrants
MOS Powerplant Theory/Maintenance (FAA Test Preparation) (2+0)
Jet engine fundamentals, analysis, testing, and inspecting turbo jets, turbo shaft, and turbo fan engines as well as overhaul, inspection, and fundamentals of reciprocating engines. Designed to prepare the student for the FAA Mechanics Airframe Structures Written, Oral and Practical Exam. Materials fee: $20.00. (Prerequisite: Meet the experience requirements of FAR 65.77 or permission of the instructor.)

AFPM 216 3 Credits As Demand Warrants
MOS Powerplant Sys/Components (3+0)
Fuel metering, induction systems, propellers, control systems, and powerplant electricity. The repair, inspection, service and troubleshooting in the above area. Designed to prepare the student for the FAA Mechanics Airframe Structures Written, Oral and Practical Exam. Materials fee: $20.00. (Prerequisite: Meet the experience requirements of FAR 65.77 or permission of the instructor.)

AFPM 230 2.5 Credits As Demand Warrants
Aircraft Electrical Systems
Overview of electrical systems and their use in aircraft. Wiring, control, indication, and protection devices are covered for both AC and DC systems. Inspection, troubleshooting service and repair of these systems is emphasized. Materials fee: $15.00. (Prerequisite: Admission to A&P Program or permission of instructor.)

AFPM 231 1.5 Credits As Demand Warrants
Powerplant Electrical Systems
The installation, inspection, testing and service of engine electrical system wiring, controls, indicator and protective devices. Also, repair and service of electrical generating systems. Materials fee: $15.00.

AFPM 235 5 Credits As Demand Warrants
Aircraft Reciprocating Engines (5+0)
A survey of the history and development of the aircraft reciprocating engine. The student will engage in the repair, overhaul, and inspection of various types of engines. Operation and troubleshooting of engines is also discussed. Materials fee: $120.00.

AFPM 240 1.5 Credits As Demand Warrants
Turbine Engines
Development, theory and operation of modern gas turbine engines. Included is the study of engine design, performance, accessories and subsystems along with an investigation of engine maintenance and overhaul.

AFPM 244 1.5 Credits As Demand Warrants
Lubricating Systems
Identification and selection of lubricants for aircraft powerplants. Inspection, service, troubleshooting and repair of the lubrication systems and its components. Materials fee: $5.00. (Prerequisite: Admission to A & P program or permission of instructor.)

AFPM 245 2.5 Credits As Demand Warrants
Ignition Systems
Overhaul, inspection and troubleshooting of reciprocating and gas turbine ignition systems, in addition to repair and bench testing of components. Materials fee: $15.00. (Prerequisite: Admission to A & P program or permission of instructor.)

AFPM 246 1.5 Credits As Demand Warrants
Fuel Metering Systems
Fundamental operation of fuel metering systems in aircraft powerplants. Use of technical data to repair and overhaul carburetors and components. Includes the inspection and service of water injection systems. Materials fee: $10.00. (Prerequisite: Admission to the A & P Program or permission of the instructor.)

AFPM 248 0.5 Credits As Demand Warrants
Induction Systems
The operation and service of aircraft induction, preheat, anti-ice and super charger systems.

AFPM 249 0.5 Credits As Demand Warrants
Powerplant Cooling Systems
Inspection, service and repair of engine cooling systems. Both air and liquid cooled installations will be discussed. (Prerequisite: Admission to A & P Program or permission of instructor.)

AFPM 250 0.5 Credits As Demand Warrants
Powerplant Exhaust Systems
Inspection, service and repair of engine exhaust systems. Operations turbo compounded engines, thrust reversers, and noise suppressors are also presented. (Prerequisite: Admission to A & P program or permission of instructor.)

AFPM 251 1.5 Credits As Demand Warrants
Fuel Systems
A practical course covering the inspection, servicing, troubleshooting and repair of aircraft and engine fuel systems and components. (Prerequisite: Admission to A & P program or permission of instructor.)

AFPM 252 2 Credits As Demand Warrants
Propellers (2+0)
Identification and nomenclature of aircraft propellers. Operation, control and repair of both reciprocating and turbine engine installations will be covered. Materials fee: $5.00. (Prerequisite: Admission to A & P program or permission of instructor.)

AFPM 253 0.5 Credits As Demand Warrants
Position and Warning Systems
A survey of speed and takeoff warning and anti-skid braking systems used in aircraft. Inspection, troubleshooting, service and repair of theses systems is discussed. (Prerequisite: Admission to A & P program or permission of instructor.)

AFPM 254 0.5 Credits As Demand Warrants
Ice and Rain Control Systems
Inspection, operation and troubleshooting of de-ice and anti-ice systems.

AFPM 255 0.5 Credits As Demand Warrants
Fire Protection Systems
A practical course covering the inspection, servicing, troubleshooting and repair of aircraft and engine fire detection and extinguishing systems. (Prerequisite: Admission to A & P program or permission of instructor.)

AFPM 256 0.5 Credits As Demand Warrants
Communications & Navigation Systems
Operation of aircraft avionics, autopilots and antennas, including their inspection and installation.

AFPM 257 0.5 Credits As Demand Warrants
Instrument Systems
A practical course covering inspection, troubleshooting, removal and replacement of aircraft and engine instruments and indicating systems. (Prerequisite: Admission to A & P program or permission of instructor.)

AFPM 258 1 Credit As Demand Warrants
Cabin Atmosphere Control Systems (1+0)
Aircraft pressurization, air conditioning, heating and oxygen systems. Their operation, inspection, troubleshooting, service and repair will be covered.

AFPM 259 1.5 Credits As Demand Warrants
Hydraulic and Pneumatic Systems
The operation of hydraulic and pneumatic systems and their uses in aircraft. Included is the identification of hydraulic fluids, seals, hydraulic and pneumatic control devices, inspection and servicing, and troubleshooting of systems.

AFPM 260 2 Credits As Demand Warrants
Aircraft Landing Gear Systems (2+0)
Comprehensive examination of simple and complex aircraft landing gear systems. Included is the operation of mechanical and hydraulic retraction mechanisms, service and repair of those systems, and wheel, tire and brake service. (Prerequisite: Admission to A & P program or permission of instructor.)

AFPM 261 0.5 Credits As Demand Warrants
Wood Structures
Inspection, service and repair of wood aircraft structures. Identification and selection of woods, characteristics of glues, patching and splicing are discussed. Materials fee: $5.00. (Prerequisites: Admission to A & P program or permission of instructor.)

AFPM 262 1 Credit As Demand Warrants
Aircraft Coverings (1+0)
Selection, application, inspection and testing of fabric and fiberglass coverings and methods of repair. Materials fee: $25.00. (Prerequisite: Admissions to A & P program or permission of instructor.)

AFPM 263 0.5 Credits As Demand Warrants
Aircraft Finishes
Identification and selection of aircraft finishing materials. Application of paints, dopes, primers, and trim. Materials fee: $30.00. (Prerequisite: Admission to A & P program and permission of instructor.)

AFPM 264 3.5 Credits As Demand Warrants
Sheet Metal Structures
Techniques of sheet metal fabrication, inspection and repair as they relate to aircraft. Included are the use of rivets and fasteners, repair of aircraft interiors and service of plastic, honeycomb and bonded structure. Materials fee: $85.00.

AFPM 265 1.5 Credits As Demand Warrants
Aircraft Welding
The use of contemporary welding methods on aircraft structures. Includes oxyacetylene, arc, inert gas and brazing techniques. The inspection of welded structure and safety procedures are stressed. Materials fee: $100.00.

AFPM 266 1.5 Credits As Demand Warrants
Assembly and Rigging
Review of aerodynamic theory and the function of aircraft control surfaces. The fabrication and installation of control devices for fixed and rotary wing aircraft, jacking and control surface balance. Materials fee: $15.00. (Prerequisite: Admission to A & P program or instructor permission.)

AFPM 267 0.5 Credits As Demand Warrants
Airframe Inspections
Students develop those skills required to inspect and return an aircraft to service. Procedural and legal aspects of 100 hour, annual and periodic inspections are discussed.) Prerequisite: Admission to A & P program or permission of instructor.)

AFPM 270 0.5 Credits As Demand Warrants
Airframe Testing
Preparation for the Federal Aviation Administration written, oral and practical exams for the Powerplant Mechanics license. (Prerequisite: Admission to A & P program or permission of instructor.)

AFPM 271 0.5 Credits As Demand Warrants
Powerplant Inspections
Methodology and recordkeeping for the inspection of aircraft reciprocating and gas turbine engines. (Prerequisite: Admission to A & P program or permission of instructor.)

AFPM 272 0.5 Credits As Demand Warrants
Powerplant Testing
Preparation for the Federal Aviation Administration written, oral and practical exams for the Powerplant Mechanics license. (Prerequisite: Admission to A & P program or instructor permission.)

Alaska Native Languages

ANL 141 3 Credits Fall

ANL 142 3 Credits Spring
Beginning Athabaskan — Koyukon (3+0) h
Introduction to Koyukon, the Athabaskan language of the Koyukuk and Central Yukon rivers. Open to speakers and non-speakers. Literacy and grammatical analysis for speakers. For others, a framework for learning to speak, read, and write the language. (Prerequisite: ANL 141 for ANL 142)

ANL 150 1 Credit As Demand Warrants
Interpretive Communication (1+0)
Participants will explore communication processes which occur in Yup'ik and English speaking cultures. They will develop working solutions that address identified problem areas in cross-cultural communication. This includes situations such as conversations, meetings, translating and interpreting. This course will concentrate heavily upon interpreting meaning in what is communicated between people of different socio/cultural backgrounds

ANL 151 3 Credits As Demand Warrants
Inter-Ethnic Communications (3+0)
Students will acquire an understanding of the differences in cross-cultural interaction and, therefore, be able to function better in a cross-cultural situation. The students will apply understanding of cross-cultural interactions to various communication settings. The course will concentrate heavily on the Yup'ik ways of communication.

ANL 215 3 Credits Fall
Alaska Native Languages: Eskimo-Aleut (3+0) h
A survey of the Native languages of Alaska, particularly of the Eskimo-Aleut languages: history, present and future, with examples of language structure, present situation and prospects as a cultural force. Open to all students.

ANL 216 3 Credits Spring
Alaska Native Languages: Indian Languages (3+0) h
A survey of all Native languages of Alaska; particularly of the Indian languages: Athabaskan-Eyak-Tlingit, Haida and Tsimshian. History, present, and future, with examples of language structure, present situation and prospects as a cultural force. Open to all students.

ANL 241 3 Credits Fall
ANL 242 3 Credits Spring
Intermediate Athabaskan — Koyukon (3+0) h
Continuation of Elementary Athabaskan — Koyukon, concentrating on development of conversational ability with presentation of additional grammar and vocabulary. (Prerequisites: ANL 141 and 142 or permission of instructor.)

ANL 387 3 Credits As Demand Warrants
ANL 388 3 Credits As Demand Warrant
Bilingual Methods and Materials (3+0) h
Training and research in bilingual education methods in Alaska Native languages and preparation of books and materials in any of them.

Alaska Native Politics

AKNP 131 1 Credit As Demand Warrants
Introduction to the Alaska Native Claims Settlement Act (1+0)
An introduction to the events which resulted in concern over the relation of Alaska Natives to their land, the movement for the Land Claims; the key issues; the organizations involved in the movement, the current corporation structure - regional and village; the current and future problems facing these groups, and strategies being used to resolve them.

AKNP 151 3 Credits As Demand Warrants
Alaska Native Claims Settlement Act (3+0)
A general survey of the Alaska Claims Settlement Act. It will include a brief historical overview of land claims of various tribes in the Lower 48 and in Alaska leading to the Settlement Act of 1971. We will examine the current status of the various Native corporations, including regional, village and non-profit corporations. We will also give special attention to the discussion of future issues related to implementation of ANCSA.

AKNP 212 1 Credit As Demand Warrants
Duties and Powers of Local Government (1+0)
This workshop focuses on the development, operation and improvement of local government in Alaska. It is aimed at the practical needs of the citizen, practitioner and advocate. Some discussion will also revolve around the future of local government in bush Alaska.

AKNP 230 3 Credits As Demand Warrants
Federal Indian Law (3+0)
A basic understanding of the principles of Federal Indian Law and help to form an opinion about the extent to which these principles may or may not be applicable to Alaska Natives. This course will outline the foundation of principles that formed the bases of the relationship of the United States to the tribes and the development of this relationship. The legal perspective and land issues will be covered. (Prerequisite: English placement test.)

AKNP 232 3 Credits As Demand Warrants
1991 and Beyond - Implications of ANCSA (3+0)
An examination of some of the specific provisions of the Alaska Native Claims Settlement Act as related to 1991. It will include acquisitions, and takeovers of corporations, a more in-depth look at such provisions as those outlined in Sections 7(i), 7(j), 7(h), and 14(c), some of the changes allowed under ANILCA and other amendments to the Act, the effect of ANCSA on such statues as the Indian Reorganization Act and the Indian Self-Determination Act, and some of the issues commonly termed 1991 issues involving land and stock status in the future. (Prerequisite: English Placement test.)

AKNP 233 1 Credit As Demand Warrants
Tribal Government Issues (1+0)
An introduction to tribal governments and related issues. It will review the political status and lawmaking, judicial, and regulatory powers of tribal governments. The topics of 'sovereignty' will be analyzed. Tribal enrollment and membership will be reviewed. A selected range of federal statutes and Indian Law affecting Alaska Native tribes will be studied. The potential role of tribal governments in planning for Alaska Natives' future will be defined and discussed.

Alaska Native Studies

ANS 103 1 Credit As Demand Warrants
Beginning Eskimo Dance (1+2)
Teaching of traditional and contemporary Yup'ik Eskimo dance through the means of singing, drumming, and motions of the stage. In-depth analysis of each song and its relation to contemporary and traditional cultural lifestyles.

ANS 110 1 Credit Fall and Spring
Parliamentary Procedures (1+0)
(Same as P.S. 110)
Introduction to the rules and principles of parliamentary procedure and their application to group decision-making processes.

ANS 120 3 Credits Fall
Cultural Differences in Institutional Settings (3+0) s
Introduction to the phenomena of culturally organized thought processes, with emphasis on the communication patterns resulting from the interaction of peoples from different linguistic/culture traditions in modern institutional settings. Special attention is paid to Alaskan Native and non-Native communication patterns.

ANS 160 1 Credit Fall
Alaska Native Dance (2+0) h
Traditional Native Alaskan dancing, singing, and drumming of songs from Alaska's major indigenous groups will be taught by guest Native elders and dancers. If sufficient interest, a dance group will be assembled using class members for spring presentation primarily in the Fairbanks area, including the Festival of Native Arts.

ANS 161 3 Credits Fall
Introduction to Tuma Theater (3+0) h
(Same as THR 161)
Introduction to playwriting and acting within an Alaskan Native cultural context. Original theatrical works based on traditional themes and contemporary issues will be developed and rehearsed. Tuma Theater will tour its annual production each spring, its membership to be selected from the class. (Prerequisite for ANS/THR 361, Advanced Tuma Theater.)

ANS 250 3 Credits Fall and Spring
Current Alaska Native Leadership Perspectives (3+0) s
Prominent leaders in the Native community are brought into direct classroom contact with students to discuss important issues in rural Alaska and the larger Native community.

ANS 251 1-3 Credits Fall and Spring
Practicum in Native Cultural Expression (0+variable)
Students actively and regularly engaged in the formal organization, promotion, and expression of Alaskan Native cultural heritage may enroll in this practicum for 1-3 credits. The practicum may be repeated through three semesters providing the accumulated credits do not exceed three. (Prerequisite: Permission of the Department Head.)

ANS 301 3 Credits Alternate Fall
Native Cultural Heritage Documentation (3+0) h
A study of the methods by which significant aspects of Native life may be documented for research purposes and/or community interests. This course is particularly suitable for students interested in Native cultural heritage expression through the arts, literature, language and historical research. (Prerequisites: HIST 100 and ANTH 242 or permission of instructor. Next offered: 1990-91.)

ANS 310 3 Credits Fall
Alaska Native Corporations (3+0) s
An examination of Native corporation goals and methods as they implement the Alaska Native Claims Settlement Act and establish themselves within the larger political economy. (Prerequisites: ANTH 242 or PS 263 or HIST 100; ECON 101 and ECON 137; or permission of instructor.)

ANS 315 3 Credits Spring
Tribal People and Development (3+0) s
(Same as RD 315) Comparative examination of socio-economic development processes as they impact tribal peoples in third and fourth world societies. Particular attention is given to the implications of these processes for Alaska Native people. (Prerequisites: Junior standing or permission of the instructor.)

ANS 320 3 Credits Spring
Language and Culture: Applications of Alaska (3+0) s
(Same as ANTH 320)
Examination of aspects of language, ethnicity, and their interrelationships. Emphasis is placed on the systems language uses to communicate ethnic identity and how communication between ethnic groups is affected by patterns of language use. Attention is paid to the applicability of these concepts to Native/non-Native communication patterns. (Prerequisites: ANS 120 and ANL 215 or 216; or permission of instructor.)

ANS 325 3 Credits Alternate Spring
Native Self Government (3+0) s
(Same as PS 325)
Comparative study of indigenous political systems, customary law and justice in Alaska emphasizing the organization of Native governance under federal Indian Law and Alaska state chartered local government with comparisons between Alaska Native political development and those of tribes in the contiguous 48 states and northern hemisphere tribal people. (Prerequisites: HIST 100, PS 263. Next offered: 1989-90.)

ANS 340 3 Credits Fall
Contemporary Native American Literature (3+0) h
(Same as ENGL 340).
An exploration of the comtemporary Native American writing in English, including novels, short stories, poetry, and plays. Some examples of Native American film will also be introduced when related to a writing. Works discussed in relation to cultural contexts and interpretations. (Prerequisite: ENGL 111 or permission of instructor.)

ANS 351 1-3 Credits Fall and Spring
Practicum in Native Cultural Expression (0+variable)
Continuation of ANS 251, for students actively involved in advanced organization, promotion, and expression of Alaskan Native cultural heritage projects (Festival of Native Arts leadership, Tuma Theater, Theata magazine, etc.) A maximum of 3 practicum credits can be applied toward a Native studies major or minor. (Prerequisite: Permission of instructor.)

ANS 361 3 Credits Fall
Advanced Tuma Theater (3+0) h
(Same as THR 361)
Continuation of ANS/THR 161 with more advanced involvement in writing (or other production oriented creative activity), research and development of original theatrical works to be performed by the Tuma Theater touring group. (Prerequisites: ANS/THR 161 and either THR 221, THR 241, THR 343, THR 347 or permission of instructor.)

ANS 365 3 Credits Fall
Native Art of Alaska (3+0) h
(Same as ART 365)
A study of art forms of the Eskimo, Indian and Aleut ranging from prehistory to the present: emphasis upon the changes in forms through the centuries. (Prerequisites: Advanced standing or permission of the instructor.)

ANS 375 3 Credits Alternate Spring
Native American Religion and Philosophy (3+0) h
Philosophical aspects of Native American world views, emphasizing systems of belief and knowledge, explanations of natural phenomena, and relations of human beings to the natural environment through ritual and ceremonial observances. (Prerequisites: ANTH 242 or permission of the instructor; PHIL 201 is recommended. Next offered: 1989-90.)

ANS 401 3 Credits Fall and Spring
Knowledge of Native Elders (3+0) h
Intensive study with prominent Native tradition-bearers in Native philosophies, values, and oral traditions. Students elicit traditional knowledge through methods and conventions of the cultural heritage documentation process. (Prerequisites: HIST 100 or ANTH 242 and upper division standing.)

ANS 425 3 Credits Fall
Federal Indian Law and Alaska Natives (3+0) s
A "special relationship" developed between the federal government and Native Americans based on land transactions and recognition of tribal sovereignty. This course examines federal Indian law and policy which evolved from this relationship with special attention to the legal rights and status of Alaska Natives. (Prerequisites: PS 101 and HIST 100; or permission of instructor; PS 263 is recommended.)

ANS 430 3 Credits Fall
Alaska Native Education (3+0) s
Examination of the development of different school systems historically serving Native people, current efforts toward local control, and the cross cultural nature of this education.
(Prerequisites: ANTH 242 or Hist. 100; or permission of instructor.)

ANS 450 3 Credits Alternate Spring
Comparative Aboriginal Rights and Policies (3+0) s
(Same as PS 450)
Use of the case-study approach to develop comparative frameworks for assessing scope and nature of Aboriginal Rights and Policies in different Nation-State Systems. Seven Aboriginal situations are examined for factors promoting or limiting Aboriginal self-determination. (Prerequisite: Upper division standing or instructor's permission. Next offered: 1989-90.)

ANS 475 3 Credits Spring
Alaska Native Social Change (3+0) s
Study is made of tradition and change in Native social institutions in contemporary society. Attention is given to methods of identifying and analyzing significant Native social change processes for better public understanding. (Prerequisites: ANTH 242 or permission of the instructor.)

Alaska Studies

ALST 103A 1 Credit As Demand Warrants
Creative Response (1+0)
Introduces students to sampling of the stories of the indigenous people of Alaska. Reviews sample work of Native Alaskan artists of the state. Examines music of Inupiat, Yup'ik and Koyukon cultures (songs and dances).

ALST 103B 1 Credit As Demand Warrants
The People (1+0)
Deals with topics of sociology, psychology and politics found in the state of Alaska. Surveys the area of social sciences and relates issues to Alaskan culture.

ALST 103C 1 Credit As Demand Warrants
The Land (1+0)
Introduces students to geography and branches of earth science as they related to the land mass of Alaska. Current issues related to the particular area of study are also included.

ALST 107 1 Credit As Demand Warrants
Land Resource Management (1+0)
This course provides students with the tools necessary to become more actively involved in overseeing the use of land and the political aspects of natural resource management. Land and resource management is the application of knowledge and skills necessary to take care of the land and other natural resources for people's welfare.

American Sign Language

ASLG 101 3 Credits As Demand Warrants
American Sign Language I (3+0)h
Visual language of signs, gestures and facial expressions used by most deaf Americans. Emphasis is on conversational skills.

ASLG 110 1 Credit As Demand Warrants
American Sign Language Prac (1+0)h
A course designed to develop skill in and practice with American Sign Language. Conducted entirely in sign.

ASLG 202 3 Credits As Demand Warrants
American Sign Language II (3+0)h
A continuation of American Sign Language I, with emphasis on receptive skills. Expressive skills in using ASL will be approached by further study of grammar structure. During ASL I and II, students will be exposed to over 1,000 signs and variations in coversational settings. (Prerequisite: ASL 101 or permission of instructor.)

ASLG 203 3 Credits As Demand Warrants
American Sign Language III (3+0)h
ASLG III is a continuation of American Sign Language II. Students will learn more of the structure and develop increased skills in both expressive and receptive communication. (Prerequisite: ASL 202 or permission of instructor.)

ASLG 204 3 Credits As Demand Warrants
American Sign Language IV (3+0)h
A continuation of American Sign Language III. Students will gain a deeper understanding of the structure and gain more skill in both expressive and receptive communication. (Prerequisite: ASL 203.)

Anthropology

ANTH 101 3 Credits Fall and Spring
Introduction to Anthropology (3+0) s
An introduction to the study of human societies and cultures based on the findings of the four subfields of the discipline: archaeological, biological, cultural and linguistic. Materials fee: $10.00.

ANTH 102 3 Credits Fall and Spring
Faces of Culture (3+0) s
Television enhanced instruction in cultural anthropology including an introduction to methods, theories, fundamental concepts and foundations for understanding differences in cultures; provides background for more specialized courses in cultural anthropology. Telecourse fee: $20.00.

ANTH 105 1 Credit As Demand Warrants
Introduction to the History and Culture of the Seward Peninsula (1+0)
(Same as HIST 105.)
This course introduces the student to the cultural history of the peoples who have lived in or near the Seward Peninsula for the last 10,000 years. Information is presented from the disciplines of physical anthropology, ethnography, ethnohistory, linguistics, archeology, ecology and climatology. Through lectures, discussions, readings, films, guest speakers and examination of Eskimo artifacts, students gain a basic familiarity with the several Eskimo and Euroamerican cultures which have existed in western Alaska.

ANTH 111 3 Credits Alternate Spring
Ancient Civilizations (3+0) s
A survey of the major civilizations of the Old and New World from a comparative, anthropological perspective. Antecedents and influences of these civilizations on their neighbors will be stressed. Major societal institutions to be considered include economics, science, religion, and social organization. (Next offered: 1990-91.)

ANTH 123 3 Credits Alternate Fall
Origins of Alaska's Native Peoples (3+0) s
Origins and affinities of native Alaskan peoples are examined from an archaeological perspective. Native groups whose prehistory is examined include Yup'ik, Inupiaq, Aleut, Tlingit, and Athabaskan. (Next offered: 1989-90.)

ANTH 200 3 Credits Alternate Fall
Social/Cultural Anthropology (3+0) s
A more advanced introduction to social and cultural anthropology designed to be of interest to majors and non-majors. Examination of a variety of social and cultural systems with emphasis on kinds of problems with which anthropologists struggle in seeking to understand the structure, process, and the role of the individual in such systems. Conceptual framework and methodology which social and cultural anthropologists employ in attempting to analyze social action will be closely examined. The course will attempt to develop in the student an awareness of the gaps between the common sense views of our culture and a scientifically adequate account of human action. (Next offered: 1990-91.)

ANTH 203 3 Credits Every Third Spring
Women in Society (3+0) s
An examination of the nature of sex roles cross-culturally. The history of the study of sex roles, with an emphasis on female roles, in anthropology is discussed. Current research on the biological and cultural aspects of these rules is presented and various hypotheses in anthropology regarding male and female behavior cross-culturally are discussed and supplemented by in-depth studies of cultures representing different types of techno-environmental adaptation — hunting, horticultural, pastoral, agricultural, and industrial societies. (Next offered: 1989-90.)

ANTH 210 3 Credits Every Third Spring
New World Prehistory (3+0) s
The culture history of native Americans from earliest times excluding Alaska and Canada, including those in Mexican and Peruvian states. (Prerequisites: ANTH 101 or 211 or permission of instructor. Next offered: 1989-90.)

ANTH 211 3 Credits Alternate Fall
Fundamentals of Archaeology (2+3) s
An introduction to methods and techniques of archeological field and laboratory research. Materials fee: $10.00. (Next offered: 1989-90.)

ANTH 212 3 Credits Alternate Fall
World Prehistory (3+0) s
The archaeological record for the development of human culture from the very beginnings of humankind to the rise of civilization. (Prerequisites: ANTH 101 or 211 or permission of instructor. Next offered: 1990-91.)

ANTH 222 3 Credits Spring
Human Evolution (3+0) n
The fossils — their morphology, inferred functional and ecological relationships, geochronologic and geochronometric placements. Current taxonomic and phylogenic assessments, theories of evolutionary processes, behavioral primatology and the role of culture in hominid evolution are also major concerns.

ANTH 230 3 Credits Fall
The Oral Tradition: Folklore and Oral History (3+0) h
An introduction to the study and collection of folklore and oral history, with focus on the importance of oral tradition in human communication and the advantages and disadvantages of recording and studying it. Methods of findings of sociocultural anthropology and anthropological linguistics in relation to oral traditions of a variety of cultures; study by folklorists and historians. Academic approaches to collection and interpretation compared to and contrasted with those whose goal is to preserve their own traditions. A field project is required.

ANTH 240 3 Credits Alternate Fall
Native Peoples of North America (3+0) s
A survey course of the cultures of the native peoples of continental United States and Canada, excluding Alaska. (Next offered: 1989-90)

ANTH 242 3 Credits Spring
Native Cultures of Alaska (3+0) s
An introduction to the traditional Aleut, Eskimo, and Indian (Athabaskan and Tlingit) cultures of Alaska. Comparative information on Eskimo and Indian cultures in Canada is also presented. Includes a discussion of linguistic groupings as well as the cultural groups; presentation of population changes through time; subsistence patterns, social organization and religion in terms of local ecology. Precontact interaction between native groups of Alaska is also explored. This is a general introductory course presenting an overall view of the cultures of Native Alaskans. Materials fee: $20.00

ANTH 245 3 Credits Alternate Spring
Circumpolar Cultural Traditions and Transformations (3+0) s
Survey of traditional cultural adaptations among the indigenous peoples of northern North America and northern Eurasia. Parallels and contrasts in European colonization of northern regions and the historical responses of native societies. Economic development, government policy and the current position of circumpolar culture in Canada, the United States, Scandinavia and the Soviet Union. (Next offered: 1990-91.)

ANTH 250 2 Credits Fall and Spring
Archeological Laboratory Techniques (1+3)
Practical experience in archeological laboratory procedures including lithic analysis and lithic tool typology. Students will examine and analyze collections from several early man sites in Alaska, and will be actively engaged in helping solve specific research problems that pertain to those collections. (Prerequisite: Permission of instructor.)

ANTH 300 3 Credits As Demand Warrants
Anthropology of Religion (3+0) s
This course focuses on one of the more fascinating subsystems of human culture and society — religion or supernatural belief. As approached from the perspective of anthropology, the study of religion is both comparative and wide ranging. While much of the material will emphasize religion in the context of "primitive" society, its role in the more complex society will also be examined. Among the various topics the student can expect to encounter are: religious practitioners, ritual, belief systems, and the relationship of religious behavior to other aspects of social behavior. (Prerequisite: Junior standing or permission of instructor.)

ANTH 305 3 Credits As Demand Warrants
Comparative Political and Legal Systems (3+0) s
An examination of political systems and the law from a comparative standpoint. The primary focus will be on case studies drawn from non-industrial societies, developing nations, and parapolitical systems or encapsulated societies, such as native peoples in the U.S. Major areas of coverage will be political structures and institutions; social conflict, dispute settlement, social control and the law, political competition over critical resources; and ethnicity. (Prerequisites: ANTH 101 or 200 or permission of instructor.)

ANTH 306 3 Credits As Demand Warrants
Economic Anthropology (3+0) s
This course addresses the fundamental issue of the relationship between economic and other social relations. The primary focus is on preindustrial societies because a central task of the course is to determine the relevance of formal economics to small-scale societies and developing nations. Included for study are such topics as exchange, formal and substantive economics, market economics, rationality, political economy, and the economics of development. (Prerequisites: ANTH 101 or 200 or permission of instructor.)

ANTH 307 3 Credits Alternate Spring
Kinship and the Family (3+0) s
Examination through case studies of the forms and function of family and household organization, kinship and marriage in diverse human socio-cultural systems. Case studies will be drawn from tribal and complex societies including contemporary United States. (Prerequisites: ANTH 101 or 200 or permission of instructor. Next offered: 1989-90.)

ANTH 309 3 Credits Alternate Springs
Arctic Prehistory (3+0) s
The archaeological cultures of the northern regions from the time of first occupation up to the ethnographic present. Particular attention will be paid to the adaptations to changing environments in time and space as seen through past technological and economic systems, as well as settlement patterns. Materials fee: $25.00. (Prerequisites: ANTH 101 or 211, or permission of instructor. Next offered: 1989-90.)

ANTH 315 3 Credits Alternate Fall
Human Biology (2+3) n
The biology of recent and modern human populations, including systematics, behavior, ecology and inter- and intrapopulation genetic and morphological variations. Human adaptations to heat, cold, high altitudes, and changing nutritional and disease patterns. Introduction to human skeletal biology, including metrical and nonmetrical variation, aging and sexing skeletal remains, and paleopathology. Materials fee: $10.00. (Prerequisite: ANTH 222 or BIOL 103. Next offered: 1989-90.)

ANTH 320 3 Credits Spring
Language and Culture: Applications of Alaska (3+0) s
(Same as ANS 320)
Examination of aspects of language, ethnicity, and their interrelationships. Emphasis is placed on the system language uses to communicate ethnic identity and how communication between ethnic groups is affected by patterns of language use. Attention is paid to the applicability of these concepts to native/non-Native communication patterns. (Prerequisites: ANS 120 and ANL 215 or 216 or permission of instructor.)

ANTH 321 3 Credits As Demand Warrants
Physical Anthropology of the Americas (3+0) n
An areal survey of the physical anthropology of the peoples of North and South America, including Eskimo, Aleut and Indian populations. The course will emphasize the analysis of patterns of biological variation within and between prehistoric and modern human populations of the Americas with special reference to origins and relationships, microevolutionary processes and trends, and adaptations to climatic, nutritional, disease and demographic stress. (Prerequisite: ANTH 315 or permission of instructor.)

ANTH 323 3 Credits Alternate Fall
Archaeology of China from Earliest Times to 771 B.C. (3+0) s
A detailed survey of weary human developments, the rise of agricultural communities, and the Golden Age states (Xia, Shang, Zhou). (Prerequisites: Any archaeology course or Asian history course or permission of instructor. Next offered: 1989-90.)

ANTH 328 3 Credits Every Third Spring
Historical and Contemporary Indian-White Relations (3+0) s
Relationships between native North American and European societies from the late 15th century to the present. Changes in government policies, rural-reservation adaptations, urban migration, political movements and pan-Indianism will be discussed in the light of general processes of acculturation, underdevelopment, ethnic change and nationalism. (Prerequisite: ANTH 240 or permission of instructor. Next offered: 1990-91.)

ANTH 329 3 Credits Alternate Fall
Peoples of the Russian North (3+0) s
A study of the native peoples and cultures of the northern region of the Russian Federation (R.S.F.S.R.) stressing the ethnography of the precontact societies, the historical interaction of Russian culture including the Soviet state. (Prerequisites: ANTH 101 or 200 or permission of instructor. Next offered: 1990-91.)

ANTH 350 3 Credits Every Third Fall
Russian Period in Alaska: 1741-1867 (3+0) s
A survey of the Russian period in Alaskan history, with emphasis on the social and cultural impacts on native Alaskans. (Prerequisites: Junior standing or permission of instructor. Next offered: 1990-91.)

ANTH 380 3 Credits Alternate Fall
The People of Alaskan Southwest: Aleuts Kodiak Islanders and the Chugach (3+0) s
Cultural heritage and present conditions of the Aleuts, including people of the Aleutian archipelago, Kodiak Islanders, people of the Alaska Peninsula and the Chugach of Prince William Sound. Materials fee: $25.00. (Prerequisites: ANTH 242 or permission of instructor. Next offered: 1989-90.)

ANTH 381 3 Credits Alternate Spring
The Inupiaq and Yup'ik Peoples (3+0) s
Study of the contemporary conditions and traditional heritage of the Inupiaq and Yup'ik peoples including the impact of Euroamericans on these populations and cultures. Materials fee: $20.00. (Prerequisites: ANTH 242 or permission of instructor. Next offered: 1989-90.)

ANTH 382 3 Credits Alternate Spring
The People of Alaskan SE (3+0) s
The Tlingit, Haida and Tsimshian societies are discussed in the framework of Northwest Coast culture-area, including impact of Russian penetration and of the recent historical factors. Materials fee: $15.00. (Prerequisites: ANTH 242 or permission of instructor. Next offered: 1989-90.)

ANTH 383 3 Credits Alternate Fall
Athabaskan Peoples of Alaska and Adjacent Canada (3+0) s
Study of the contemporary conditions and traditional heritage of the Athabaskan populations of Alaska and Canada, including the impact of Euroamericans on these populations and cultures. Materials fee: $20.00. (Prerequisites: ANTH 242 or permission of instructor. Next offered: 1990-91.)

ANTH 410 3 Credits Alternate Fall
History of Social/Cultural Anthropology (3+0) s
The major theoretical approaches in cultural/social anthropology presented chronologically from the formulation of the discipline of anthropology to current theory. The substance of the various approaches is used for discussions regarding the nature of the discipline, its goals and methods, and the relevance of theoretical perspectives to interpretations in anthropology. (Prerequisite: Junior standing or permission of instructor. Next offered: 1990-91.)

ANTH 412 3 Credits As Demand Warrants
Anthropology of Art (3+0) s
Anthropological study of art in cross-cultural perspective. Primary focus is on social context of art production and use, and on cross-cultural variations in definition of an artist's role. (Prerequisites: Senior standing or permission of instructor.)

ANTH 413 3 Credits Alternate Spring
Archaeological Method & Theory (2+3) s
Archaeological methods and analysis will be presented as the framework for discussion and assessment of different perspectives in archaeology. These various perspectives will be illustrated through the study of their application to specific research problems. Materials fee: $10.00. (Prerequisite: A course in archaeology or permission of the instructor. Next offered: 1990-91.)

ANTH 414 3 Credits As Demand Warrants
Environmental Archaeology (3+0) n
Introduction to Quaternary environmental reconstruction through the integration of geological, archaeological, botanical, and zoological data. (Prerequisite: A course in archaeology or permission of the instructor.)

ANTH 421 3 Credits Alternate Fall
Analytical Techniques (3+0)
Classification, sampling, collection and analysis of anthropological data: parametric and nonparametric significance tests and measures of association, analysis of frequency data, estimating resemblance using multiple variables, computer simulations and methods of illustrating results of analysis. (Prerequisites: Any 200 level Anthropology course. Next offered: 1989-90.)

ANTH 422 3 Credits As Demand Warrants
Human Osteology (2+3) n
Human skeletal analysis: bone biology, skeletal anatomy, aging and sexing, metric and nonmetric traits of skeleton and dentition, paleopathology, and paleodemography. Inferences on genetic relationships between and patterned behavior within prehistoric groups derived from skeletal material. Materials fee: $10.00. (Prerequisite: ANTH 315 or permission of instructor).

ANTH 428 3 Credits Every Third Fall
Ecological Anthropology (3+0) n
The investigation of the biological, environmental and cultural factors and their interplay in defining the human condition, with examples from Arctic and other populations. (Prerequisites: Junior standing or permission of instructor. Next offered: 1989-90.)

ANTH 461 3 Credits Alternate Fall
Stratigraphy (2+3)
Sedimentation and stratification as site formational and deformational processes and documentation of sites. (Prerequisites: GEOS 101, ANTH 211. Next offered: 1989-90.)

ANTH 465 3 Credits Alternate Spring
Geoarcheology (3+0)
(Same as GEOS 465)
The geological context of archaeological sites and the geologic factors that affect their preservation, with emphasis on Alaska. Includes a one or two-day field trip planned for a weekend in late April or early May. (Prerequisites: GEOS 101, an introductory course in archaeology, or permission of instructor. Next offered: 1989-90.)

ANTH 600 0-1 Credits Fall and Spring
Anthropology Colloquium (1+0)

ANTH 601 3 Credits Alternate Fall
Proseminar in Social/Cultural Anthropology (3+0)

ANTH 604 3 Credits As Demand Warrants
Seminar: Language and Culture (3+0) s

ANTH 608 3 Credits Every Third Spring
Classics in Anthropology (3+0)

ANTH 611 3 Credits Alternate Fall
Proseminar in Archaeology (3+0)

ANTH 612 3 Credits As Demand Warrants
Paleoecology (3+0)

ANTH 613 3 Credits As Demand Warrants
Seminar: Problems in Arctic Archaeology (3+0)

ANTH 614 3 Credits Alternate Spring
Archaeology of Siberia (3+0)

ANTH 615 3 Credits As Demand Warrants
Seminar: Archaeological Method and Theory (3+0)

ANTH 616 3 Credits Alternate Spring
Classics in Archaeology (3+0)

ANTH 621 3 Credits Alternate Spring
Proseminar in Physical Anthropology (3+0)

ANTH 622 3 Credits Alternate Fall
Problems in Physical Anthropology (3+0)

ANTH 630 3 Credits Alternate Spring
Anthropological Field Methods (3+0)

ANTH 637 3 Credits As Demand Warrants
Methods in Ethnohistorical Research (3+0)

ANTH 640 3 Credits As Demand Warrants
Problems in Anthropology (3+0)

ANTH 650 3 Credits Every Third Spring
Anthropological Perspectives on Russian America (3+0)

Applied Art

APAR 100 1 Credit As Demand Warrants
Basic Video Workshop (1+1)
This will be a 'hands-on' course, introducing the student to basic video equipment operation and elementary equipment maintenance. Camera techniques, portable video recorders, lighting, audio, and simple video production will all be covered.

APAR 103 1 Credit As Demand Warrants
Editing Videotape (1+1)
An introduction to the principles and operations in the electronic editing of videotape. This 'hands-on' course will be of particular value to the serious user, either at work or in the home. Persons successfully completing this course will qualify for access to Media Center videotape editing facilities.

APAR 105 1 Credit As Demand Warrants
Community TV Production (1+1)
This course is designed for people who wish to become actively involved in producing programming for the Nome Public Access Cable Television (NPACT) channel. The class will have 'hands-on' training with a variety of video equipment and will be responsible for producing at least one 30-minute production. Participants will handle all aspects of production. Emphasis will be on using available video technology to fulfill a communications need. This will be a production lab class which will run 10 weeks.

APAR 107 1 Credit As Demand Warrants
Beading (1+1)
This introductory course will teach the application of beads to various materials, three kinds of stitches, and use of a bead loom.

APAR 157 1-2 Credits As Demand Warrants
Skin Sewing (1+2)
This is an introduction to skin sewing. Students will begin sewing projects dependent upon their individual ability and experience levels. After the students have been assessed, they will be introduced to larger projects (e.g. slippers, mukluks, mittens, fur hats, vests and ruffs.) Materials fee: $35.00.

Applied Business

ABUS 051 3 Credits As Demand Warrants
Bookkeeping For Business (3+0)
Basic concepts and procedures of practical bookkeeping. Fundamental bookkeeping principles, practices, and procedures necessary in recording and reporting financial data for service and merchandising business. Covers businesses owned by one individual only (sole proprietorships.)

ABUS 052 3 Credits As Demand Warrants
Bookkeping for Business II (3+0)
Continuation of ACCT 051. Accounting for business partnerships of corporations. Covers other materials selected by teacher, based on student interest.

ABUS 056 1 Credit As Demand Warrants
Mathematics for the Office (1+0)
This course reviews basic math processes applied to banking, payroll, business expense reports, commissions, and discounts.

ABUS 081 3 Credits As Demand Warrants
World of Business (3+0)
Preparatory skills for business.

ABUS 083 3 Credits As Demand Warrants
Introductory Accounting (3+0)
This course is designed for the student who has not had high school bookkeeping. This course covers fundamental accounting procedures for a one-owner service and merchandising business.

ABUS 100 3 Credits As Demand Warrants
Accounting For Small Business (3+0)
Financial accounting for small businesses, particularly aimed at the practicality of local business.

ABUS 120 1-3 Credits As Demand Warrants
Basics of Investing
This course covers personal financial planning, goal setting, and investing. Also, a study will be made of stocks, bonds, trusts, securities, options, real estate and other investment vehicles. The topics of inflation, taxes, interest rates, retirement, and selecting financial planners are covered.

ABUS 130 3 Credits As Demand Warrants
Real Estate (3+0)
This course introduces students to the broad social and economic impact of real estate and provides fundamental preparation work for the Real Estate licensing examination. Course content includes essential details in buying, selling, leasing, and investing in residential and investment real estate. Also contracts, deeds, mortgages, leases, title insurance, sales, brokerage and other related subjects are discussed.

ABUS 135 3 Credits As Demand Warrants
Recordkeeping for Business (3+0)
A course designed to teach skills in keeping business records and banking procedures as a cashier, sales clerk, purchasing agent or payroll clerk.

ABUS 141 2 Credits As Demand Warrants
Payroll Accounting (2+0)
An introduction to payroll records and laws that payroll personnel need to know. It acquaints students with methods used to compile payroll information, compute earnings, figure deductions, calculate net wages, and how to prepare the necessary city, state and federal tax report forms.

ABUS 142 2 Credits As Demand Warrants
Office Accounting I (2+0)
A beginning course introducing the basic accounting procedures used in service and trade businesses. It presents the complete accounting cycle including recordkeeping, posting and preparation of financial statements, bank reconciliation, payroll computations and closing books for a period. Also, accounts receivable, accounts payable, purchasing, credit and other accounting requirements common to retail, trade and service businesses are covered.

ABUS 143 2 Credits As Demand Warrants
Office Accounting II (2+0)
An introduction to financial activities of partnerships and corporations with emphasis on accrual basis of accounting. Areas covered include: notes payable, notes receivables, interest transactions, bade debts, partnership equity accounting, corporate stock transactions, corporate earnings, capital transactions, bonds, long term liabilities and investments.

ABUS 154 3 Credit As Demand Warrants
Human Relations (3+0)
A basic course in human relations exploring attitudes, self-concepts, personal communication styles, motivation, interactions, positive reinforcements, team building and leadership development.

ABUS 155 2 Credits As Demand Warrants
Business Math (2+0)
A review of basic math computation skills applied to various business areas. Emphasis is on applications.

ABUS 156 2 Credits As Demand Warrants
Writing for the Office (2+0)
(Same as OP 156)
This course will cover writing tasks encountered in typical office situations. Students will learn to write successful letters, minutes, and reports which convey their intent and get desired responses. The course if offered in two modules: Module A-1 Credit; Module B-1 Credit.

ABUS 160 3 Credits As Demand Warrants
Principles of Banking (3+0)
A comprehensive introduction to banking in today's economy. Topics include language and documents of banking, check processing, teller functions, deposits, credit and payment functions, loans, investments, trust, the Federal Reserve System and other regulatory agencies.

ABUS 161 3 credits As Demand Warrants
Found/Structure-Credit Union (3+0)
An introduction to credit unions, their organization and functions, financial development, regulations, insurance, bonding and management.

ABUS 165 3 Credits As Demand Warrants
Installment Lending (3+0)
Principles of credit evaluations, open-end credit, marketing bank services, collection policies and procedures, financial statement analysis, and other details of installment credit.

ABUS 166 3 Credits As Demand Warrants
Residential Mortgage Lending (3+0)
Provides a background in the varied real estate mortgage credit operations of commercial banks; addresses the manner in which funds are channeled into mortgage markets, the financing of residential and income producing property and administrative tasks common to most mortgage departments.

ABUS 167 3 Credits As Demand Warrants
Branch Management
Presents a comprehensive overview of the branch functions and the manager's role in their operations and provides a complete introduction to the functional aspects of the branch management position.

ABUS 179 3 Credits As Demand Warrants
Fundamentals of Supervision (3+0)
A course introducing effective supervisory concepts including planning, organizing, and staffing functions. Other topics include communicating and delegating effectively, morale, productivity, decision making, position discipline and performance goals development.

ABUS 181 3 Credits As Demand Warrants
Law & Banking Applications (3+0)
Examination of the legal structure that is implicit in the normal course of bank operations. Exploration of legal situations that occur in the deposit, collection, dishonor and return, and payment of checks. Legal relationships of the various parties in bank collection channels and between a bank and it's depositors are discussed. (Prerequisite: Principles of Banking or Foundations & Structure of Credit Unions.)

ABUS 185 3 Credits As Demand Warrants
Teller Operations Training (3+0)
Entry level job skills for work as a teller in a bank, savings loan, or credit union. Principles of banking, banking terms, and concepts, teller operations such as balancing, cash control, handling financial instruments, detecting forgery and counterfeit money, responding to robbery, and customer relations. (Prerequisite: OP 195 Pre-Employment Skills.)

ABUS 188 2 Credits As Demand Warrants
Personal Income Tax (2+0)
A basic course in personal income tax, covering taxable income, deductions, credit, exemptions, and computation. Also, computer use, recordkeeping methods, tax forms and new tax laws are studied.

ABUS 211 2 Credits As Demand Warrants
Tax For Business Entities (2+0)
Covers tax reports which must be submitted by a business. Taxplanning and strategies to reduce the tax bill, payroll tax reports and depository requirements, methods of compensation, acquiring and disposing of business assets, and planning for corporate reorganization or liquidation and a review of new tax laws are also studied.

ABUS 221 1-3 Credits As Demand Warrants
Microcomputer Accounting
This course covers the use of computers to process accounting transactions and provides an understanding of available software packages, microcomputer systems and hardware available in today's market. Computer terminology, system analysis, and actual computer operations in accounting are introduced. (also see CAPS 221.)

ABUS 222 3 Credits As Demand Warrants
Computer Applications in Business (3+0)
This course is designed to provide the student with the skills and knowledge to use a microcomputer to solve business problems. The primary tools for problem solution will be the LOTUS 1-2-3 spreadsheet program and a general ledger accounting program. Both programs are supplied and instruction in the use of each is provided. (Prerequisite: One accounting course or instructor's approval.)

ABUS 223 3 Credits As Demand Warrants
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.

ABUS 224 3 Credits As Demand Warrants
Money And Banking (3+0)
Basic economic principles as they relate to banking. Highlights are on the economy and how it works, the Federal Reserve System, the business of banking, monetary policy and its impact on financial markets and banks, alternative theories of money's role in the economy, fiscal policy and trends in banking. (Prerequisite: ABUS 160 or ABUS 161.)

ABUS 230 3 Credits As Demand Warrants
Applied Intermediate Accounting (3+0)
Review of accounting principles with emphasis on working capital, plant assets, intangible assets and financial statement presentation. Introduction to current accounting pronouncements.

ABUS 231 3 Credits As Demand Warrants
Introduction to Personnel (3+0)
A class on the organizational structure of a company, job analysis, staffing and organization, employee growth and development, employee supervision and developing leadership skills.

ABUS 232 3 Credits As Demand Warrants
Fundamentals of Management (3+0)
An examination of the basic functions of management to include planning, organizing, staffing, directing and controlling with particular attention to the human aspects of management and decision making. (Prerequisite: BA 151 or instructor permission.)

ABUS 233 3 Credits As Demand Warrants
Financial Management (3+0)
Analysis of the methods of corporate financial planning and control, asset management, capital budgeting, and financial markets and instruments. (Prerequisite: BA 151, ACCT 101.)

ABUS 234 3 Credits As Demand Warrants
Financial Counseling (3+0)
Introduction to financial counseling processes, choosing and implementing actions plans, evaluation clients needs, generation of alternative solutions, problem solving, decision making and ethics in counseling relationships.

ABUS 241 3 Credits As Demand Warrants
Applied Business Law I (3+0)
A survey of the legal aspects of business problems including basic principles, institutions and administration of law in contracts, agency, employment and personal sales and property ownership. (Prerequisite: BA 151.)

ABUS 242 3 Credits As Demand Warrants
Applied Business Law II (3+)0
A survey of legal aspects of business problems including basic principles, institutions, and administration of law in insurance, suretyship (negotiable instruments), partnerships, corporations, trusts, wills, bankruptcy, torts and business crimes. (Prerequisite: BA 241.)

ABUS 243 3 Credits As Demand Warrants
Applied Cost Accounting (3+0)
Principles and applications of cost accounting for manufacturing and non-manufacturing firms. The course covers job order and process costing with analysis of material and labor costs, overhead, inventory controls, production flow, and work in progress. Budgeting and decision making are emphasized using cost accounting methods. (Prerequisite: ACCT 101, ACCT 102 or ABUS 142 and ABUS 143.)

ABUS 244 3 Credits As Demand Warrants
Loan Officer Development (3+0)
A course designed to study and develop interpersonal skills necessary for dealing with customers and bank personnel. Other areas of study include: loan interview, problem identification, credit development decision, communications, credit file reports, loan pricing, and negotiating skills.

ABUS 250 3 Credits As Demand Warrants
Introduction to Managerial Accounting (3+0)
A course in the use of accounting information for managerial decisions, planning and control. Topics include the accounting process, responsibility in accounting, performance measurement, capital budgeting and analysis of financial reports. (Prerequisite: ACCT 101, 102.)

ABUS 252 3 Credits As Demand Warrants
Business Statistics (3+0)
Introduces descriptive and inferential statistics. Includes measures of control, tendency and variation, partial and multiple correlation and regression, time series and forecasting. Presents computer applications. (Prerequisite: must have sophomore standing or instructor permission.)

ABUS 253 3 Credits As Demand Warrants
Principles of Retailing (3+0)
A course to acquaint students with current retail practices and technologies to assist them in preparing for a career in retailing or a service business. Areas covered include merchandising, store operation, computerized inventory control and electronic cash registers, finance and credit, personnel, sales promotions and selling.

ABUS 254 3 Credits As Demand Warrants
Salemanship (3+0)
Designed for both people with and without sales experience. Explores salesmanship as a skill individuals use in selling themselves and their ideas as well as products and services. Topics include: personal selling, buyer behavior and communication, creative selling process, sales management, and time-use management.

ABUS 257 1 Credit As Demand Warrants
Accounts Receivable Management (1+0)
Covers the entire A/R system: credit policy and management, billing cycles, A/R reporting; collections procedures and legalities, analysis of A/R reports and functions of the Credit Department.

ABUS 258 1 Credit As Demand Warrants
Purchasing And Cost Control (1+0)
Covers the purchasing and accounts payable systems of an organization of business; forms design and use, accounts payable department functions, design of systems, receiving of merchandise, approving and paying of invoices, evaluating and choosing supplies, accounting for accrued expenses, cash flow management, purchasing and inventory control.

ABUS 261 3 Credits As Demand Warrants
Analyzing Financial Statements (3+0)
An introduction to statement analysis, accounting data, cash flow management ratios, comparative statements, forecasting, liquidity, solvency and capital structure as they related to financial conditions and performance of modern business enterprise.

ABUS 270 1 Credit As Demand Warrants
Financial Statement Ratio Analysis (1+0)
This course takes the accounting student from the preparation of financial statements to the use of these reports as Management. Information by analysis. Key ratios are studied in the context of the business decisions to which they apply. A great deal of practical problem-solving is included in the format.

ABUS 273 3 Credits As Demand Warrants
Managing A Small Business (3+0)
This course covers the fundamental of entrepreneurship and management with emphasis on starting up a new business, buying an existing business or a franchise. Other topics include managing, marketing, staffing, financing, budgeting, pricing, and operational analysis and controls.

ABUS 099, 199, 299 1-3 Credits As Demand Warrants
Practicum In Applied Business
An orientation to work and training with analysis of the work experience and the relationship of the job to career and academic goals. The higher levels are designed for the student seeking an associate degree and provide an opportunity for practical application of knowledge and skill. It may be essential for students to have access to the faculty advisor for extended periods of time on a regular basis. Topics may include managerial concepts, problems of working with groups and individuals, organizational structures, communications and planning. (Prerequisite: Permission of the instructor.)

Applied Mining Technology

AMIT 101 3 Credits As Demand Warrants
Introduction To Mining (3+0)
This course covers the fundamental of surface and underground mining and emphasizes economic planning, proper exploration designs, environmental concerns, and safety factors.

AMIT 109 1 Credits As Demand Warrants
Underground Mine Safety (1+0)
This course fulfills the Mine Safety Health Administration requirements for new underground miner training. Topics covered include: rights of miners, self rescue devices, introduction to the work environment, escapeways, roof and ground control, ventilation, health, clean-up, hard recognition, first aid, mine gasses, and electrical hazards. Students will be awarded a MSHA certificate upon successful completion of this class. Materials fee: $5.00.

AMIT 110 3 Credits As Demand Warrants
New Underground Miner Training (3+0)
This course is designed to provide the inexperienced underground miner with the mandatory MSHA federal training to become employable. Skills taught include orientation to the mine environment, general mine inspection, scaling, staging, drilling, rock bolting, blasting, mucking, and mine rescue. Materials fee: $5.00.

AMIT 120 2 Credits As Demand Warrants
Explosives I (2+0)
This course discusses the theory and safe use of explosives with a focus on blasting agents used for rock excavation. Materials fee: $4.00.

AMIT 125 3 Credits As Demand Warrants
Mineral Exploration Techniques (3+0)
This course covers the modern, scientific exploration and prospecting techniques utilized in Alaska since the 1970's. Exploration design, ore deposit models, exploration geochemistry and geophysics, drilling sampling and goestatistics will be studied.

AMIT 129 1 Credit As Demand Warrants
Surface Mine Safety (1+0)
This course fulfills the Mine Safety Health Administration requirements for surface miner training. Course topics include rights of miners, introduction to the work environment, ground control, hazard recognition, first aid, and explosive safety. Students will be awarded a MSHA certificate upon successful completion of the class.

AMIT 130 3 Credits As Demand Warrants
Surface Mining Operations (3+0)
This course covers the safe operations of a surface mine. Placer gold, sand and gravel, coal, and open pit metal mines will be studied in detail. Materials fee: $5.00.

AMIT 140 3 Credits As Demand Warrants
Envionmental Permitting (3+0)
This course covers the permits necessary for mineral development in Alaska. Students are encouraged to provide their own case histories.

AMIT 151 1 Credit As Demand Warrants
Settling Pond And Recycle Tech (1+0)
This course covers the design of settling ponds and recycle systems. Students will work with individual case histories.

AMIT 152 1 Credit As Demand Warrants
Fire Assay Techniques (1+0)
This course is an overview of the sampling, theory and practice of fire assaying. Covered in depth are such topics as fluxes, oxidation and reduction reactions, fusion of assay charges, cupellation, annealing, micro-weighing and assay charge calculation.

AMIT 153 1 Credit As Demand Warrants
Laboratory Analysis (1+0)
Laboratory procedures required for sample analysis, heap leaching and titrations will be taught in a production laboratory. Students will get hands-on experience by conducting individual projects.

AMIT 154 1 Credit As Demand Warrants
Water Quality and Flocculents (1+0)
A summary of the water quality processes involved using flocculents with emphasis on removing total suspended solids from placer mining waster water.

AMIT 155 1 Credit As Demand Warrants
Drilling Technology (1+0)
An introduction to the terminology and techniques used in exploration and production drilling.

AMIT 156 1 Credit As Demand Warrants
Applied Cartography (1+0)
Map and chart preparation is the focus of this class. Topics covered include drafting skills for prospecting maps, mine maps, permits and data presentation.

AMIT 161 1 Credit As Demand Warrants
Alaska Ore Deposits (1+0)
The geology, ore reserves and preliminary mining plans of significant Alaskan mineral deposits will be discussed in detail.

AMIT 162 1 Credit As Demand Warrants
Geochemical Sampling (1+0)
A hands-on course in scientific sampling methods for rock, soil, pan concentrates, stream sediments, air and water.

AMIT 170 3 Credits As Demand Warrants
Fundamentals of Coal Mining (3+0)
Topics of study include the origin and types of Alaskan and other coal deposits, exploration and planning methods, extraction processes for underground and surface mines, mining safety, coal preparation, and reclamation. An optional field trip will be taken to an active coal mine. Job requirements, safety, and environmental consideration will be highlighted. Materials fee: $4.00.

AMIT 180 3 Credits As Demand Warrants
Colored Stone Grading and Evaluation (3+0)
Grading, appraisals, and identification of colored stones is the topic of this course. Formation and structure, properties, deposits and production, and the descriptions of major gemstones are major topics of this course.

AMIT 185 1 Credit As Demand Warrants
Diamond Evaluation & Grading (1+0)
This course is an introduction to diamonds: colors and clarity grading, mining of raw material, and detection of stimulants.

AMIT 205 1 Credit As Demand Warrants
Geomagnetic Surveying (1+0)
This course covers placer gold deposit prospecting using magnetic surveying. Students will conduct an actual survey and interpret the data.

AMIT 206 1 Credit As Demand Warrants
Electromagnetic Surveying (1+0)
This course covers electromagnetic geophysical exploration methods and operations using the VLF-EM-16. This instrument has had wide usage in the mining industry as an exploration tool for gold and/or massive sulfide deposits.

AMIT 210 3 Credits As Demand Warrants
Advanced Underground Mining (3+0)
Advanced techniques in underground mining is the topic of this course. Skill training will be conducted in safety, drilling, blasting, ground support, mucking, maintenance and utilities. Training will be conducted in the Silver Fox Mine.

AMIT 220 1 Credit As Demand Warrants
Explosives II (1+0)
An advanced course in the safe use of explosives. Students will get 'hands-on' experience in blasting. Materials fee: $20.00.

AMIT 230 1 Credit As Demand Warrants
Field Methods (1+0)
Covers topographic map reading using a compass and basic field procedures.

AMIT 231 1 Credit As Demand Warrants
Heap Leaching (1+0)
An advanced course on heap leaching covering cyanide safety, leach pad construction and placement, cyanide processing, thiourea, case histories, applications to Alaska and economics.

AMIT 280 3 Credits As Demand Warrants
Colored Stone Evaluation II (3+0)
This course is a continuation of Colored Stone Evaluation I. Gemstones covered in this class are stones of the garnet, pyroxene, organic, inorganic, and specialty stones. (Prerequisite: AMIT 180 Colored Stone Evaluation I.)

AMIT 282 1-2 Credits As Demand Warrants
Mining Coop Work Experience
A course for the student who has mastered basic mining techniques and terminology which provides practical work experience in a professional mining environment. Placement and work assignments will vary depending upon student experience.

Applied Photography

APHO 072 1 Credit As Demand Warrants
Photography Fundamentals (1+0)
How to make colorful, well-exposed photographs taking advantage of the capabilities of modern cameras. Elements of composition, exposure and flash techniques. Students furnish their own camera and film.

APHO 073 1 Credit As Demand Warrants
Process and Print Color Slides (1+0)
Learn how to develop color film, mounted in slides for projection; make color prints and enlargements; mix color filters for special effects; and set up a small home darkroom. Students must have a camera and obtain their own film and film processing.

APHO 074 1 Credit AS Demand Warrants
Process/Print Color Negatives (1+0)
Students develop their own print film using the Kodak Flexicolor C-41 and Hobby-pac processes. Proof sheets are then made from which selected enlargements are printed using Extaprint 2, Hobby-pac and Ektaflex processes. Students must have a camera and two rolls of film.

Art

ART 100 3 Credits As Demand Warrants
Art Exploration (3+0)
Recommended for students seeking initial exposure to various areas such as design, printmaking, weaving, and sculpture. Individual studio projects, lectures, and field trips to introduce possible areas for further concentrated study.

ART 101 3 Credits As Demand Warrants
Introduction To Ceramics (3+0)
Introduction to making and firing clay objects. Study of clay methods, forming decorations, glazing and firing. For beginning students only.

ART 104 1-3 Credits As Demand Warrants
Introduction to Drawing
An introduction course emphasizing self-expression by developing spontaneous artistic ideas into a more focused style. This course employs basic drawing materials and uses student assignments in still life, portrait, interior and landscape compositions as topics for classroom study. For the student with little or no training in drawing who wishes to explore his or her drawing abilities.

ART 105 3 Credits Fall, Spring
Beginning Drawing (1+4) h
Introduction to basic elements in drawing. Emphasis on a variety of techniques and media. Materials fee: $15.00.

ART 113 1-3 Credits As Demand Warrants
Introduction to Painting (1+2)
An investigation of basic materials, various media and techniques available for painting.

ART 122 2 Credits As Demand Warrants
Stained Glass (2+4)
This course covers the fundamental skills needed to construct stained glass pieces, with special attention given to the basics of glass cutting, leading and soldering. During this course each student will complete a square foot window, a large group project and a suncatcher.

ART 161 3 Credits Fall, Spring
Two-Dimensional Design (1+4) h
Fundamentals of pictorial form; principles of composition, organization, and structure.

ART 162 3 Credits Fall, Spring
Color and Design (1+4) h
Fundamentals of color principles and interactions. Emphasis on two dimensions. Materials fee: $25.00.

ART 163 3 Credits Fall, Spring
Three-Dimensional Design (1+4) h
Fundamental concepts in organization of 3-dimensional forms. Introduction to various materials and construction techniques. Materials fee: $25.00

ART 201 3 Credits Fall, Spring
Beginning Ceramics (1+4) h
An introduction to ceramics. Foundation experiences with clays, glazes, plaster, enamels, glass, kiln stacking and firing. Materials fee: $35.00. (Prerequisites: ART 105 and ART 161 or 162 or 163, or permission of the instructor.)

ART 205 3 Credits Fall, Spring
Intermediate Drawing (1+4) h
Exploration of pictorial composition and creative interpretation of subjects. Materials fee: $25.00. (Prerequisite: ART 105.)

ART 207 3 Credits Fall, Spring
Beginning Printmaking (1+4) h
Introduction to the concepts and techniques of printmaking. Subject areas taken from: relief, intaglio, serigraphy, lithography. Materials fee: $25.00. (Prerequisites: ART 105 and ART 161 or 162 or 163, or permission of the instructor.)

ART 208 2 Credits As Demand Warrants
Art for the Classroom Teacher (1+2)
The course will introduce concepts in art education to persons with limited art background who are working with young children. The course will combine a philosophy of Art Education, Art History, and 'hands-on' experiences to enable the classroom teacher to more effectively integrate the visual arts into the classroom curriculum as enjoyment and enrichment. Can also be taken as ED 208.

ART 209 3 Credits Fall, Spring
Beginning Metalsmithing (1+4) h
Introduction to the basic techniques of fine metalsmithing and jewelry. Materials fee: $35.00. (Prerequisites: ART 105 and ART 161 or 162 or 163, or permission of the instructor.)

ART 211 3 Credits Fall, Spring
Beginning Sculpture (1+4) h
An introduction to basic sculpture techniques and principles. Materials fee: $35.00. (Prerequisites: ART 105 and ART 161 or 162 or 163, or permission of the instructor.)

ART 213 3 Credits Fall, Spring
Beginning Painting (Acrylic or Oil) (1+4) h
Basic materials and techniques in either medium. Introduction to pictorial principles and organization of paintings. (Prerequisites: ART 105 and ART 161 or 162 or 163, or permission of the instructor.)

ART 223 3 Credits Every Third Spring
Watercolor Painting (1+4) h
Painting in various transparent and opaque media (watercolor, tempra, polymer, casein). Emphasis on techniques and subjects. (Prerequisite: ART 105 and ART 161 or 162 or 163, or permission of the instructor. Next offered: 1990-91.)

ART 261 3 Credits Fall
ART 262 3 Credits Spring
History of World Art (3+0) h
Origins of art and its development from the beginning through contemporary painting, sculpture and architecture. Art 261-262 may be taken in reverse order; however, course content is presented in a chronological sequence beginning with fall semester. Term paper required each semester. (Prerequisite: Sophomore standing.)

ART 301 3 Credits Fall, Spring
Intermediate Ceramics (1+4) h
A continuation of beginning ceramics with a major emphasis on glaze calculations, and advanced plaster techniques. Materials fee: $35.00. (Prerequisites: ART 201 or permission of instructor.)

ART 305 3 Credits Spring
Advanced Drawing (1+4) h
Development and refinement of individual problems in drawing. Can be repeated for credit with permission of instructor. Materials fee: $25.00. (Prerequisites: ART 205 or permission of instructor.)

ART 307 3 Credits Fall, Spring
Intermediate Printmaking (1+4) h
A continuation of ART 207 with emphasis on refinement of technique and color printing. Materials fee: $25.00. (Prerequisite: ART 207, or permission of instructor.)

ART 309 3 Credits Fall, Spring
Intermediate Metalsmithing and Jewelry (1+4) h
Further investigation of material processes and techniques for metalsmithing and jewelry with some emphasis on design. Materials fee: $35.00. (Prerequisites: ART 209 or permission of instructor.)

ART 311 3 Credits Fall, Spring
Intermediate Sculpture (1+4) h
Exploration in materials and concepts of sculpture. Emphasis on personal creativity and skill development. Materials fee: $35.00. (Prerequisites: ART 211 or permission of instructor.)

ART 313 3 Credits Fall, Spring
Intermediate Painting (1+4) h
Continued development of expressive skills in painting in any painting media. Emphasis on pictorial and conceptual problems. (Prerequisite: ART 213.)

ART 324 3 Credits Fall, Spring
Watercolor Painting and Composition (1+4) h
Development of individual approach to watercolor media. Can be repeated for credits with permission of the instructor. (Prerequisite: ART 223. Next offered: 1990-91.)

ART 363 3 Credits Alternate Spring
History of Modern Art (3+0) h
Development of modern art forms and theories in the visual arts from the late 19th century until contemporary art. Concentration on explaining the artistic pluralism of 20th century art forms: Cubism, Futurism, Surrealism, Expressionism, Constructivism, Non-objective Art, Abstract Expressionism, Pop Art, Realism and many other "ism." (Prerequisites: ART 262 or permission of instructor. Next offered: 1989-90.)

ART 364 3 Credits Alternate Spring
Italian Renaissance Art (3+0) h
The development of the Renaissance from early Florentine beginnings to the High Renaissance of Venice. Study of the works of such artists as Massacio, Michelangelo, DaVinci, Titian, etc. (Prerequisite: ART 261 or permission of instructor. Next offered: 1990-91.)

ART 365 3 Credits Fall
Native Art of Alaska (3+0) h
(Same as ANS 365) A study of art forms of the Eskimo, Indian and Aleut ranging from prehistory to the present: emphasis upon the changes in forms through the centuries. (Prerequisites: Advanced standing or permission of the instructor.)

ART 371 3 Credits Fall
Introduction to Computer Art (1+4)
An introduction to digital editing with an overview of the field of computer art. (Prerequisites: Introductory computer course, one from ART 105, 161, 162, or 163.)

ART 401 3 Credits Fall, Spring
Advanced Ceramics (1+4) h
Advanced ceramic work with an emphasis on individual projects, plus a class project on architectural mural(s). May be repeated for credit with permission of instructor. Materials fee: $35.00. (Prerequisites: ART 301 or permission of instructor.)

ART 407 3 Credits Fall and Spring
Advanced Printmaking (1+4) h
An individual development of technical and creative processes in printmaking. May be repeated for credit with permission of instructor. Materials fee: $25.00. (Prerequisites: ART 307 or permission of instructor.)

ART 409 3 Credits Fall and Spring
Advanced Metalsmithing and Jewelry (1+4) h
Continued investigation of materials and processes with an introduction to holloware skills and forging. May be repeated for credits with permission of instructor. Materials fee: $35.00. (Prerequisites: ART 309 or permission of instructor.)

ART 411 3 Credits Fall and Spring
Advanced Sculpture (1+4) h
Advanced investigation into the principles, practices and concepts of, sculpture. May be repeated for credit with permission of instructor. Materials fee: $35.00. (Prerequisites: ART 311 or permission of instructor.)

ART 413 3 Credits Fall, Spring
Advanced Painting (1+4) h
Individual experimentation and technical/conceptual development in painting. Can be repeated for credits with permission of instructor. (Prerequisite: ART 313.)

ART 417 3 Credits Every Third Fall
Lithography (1+4) h
An exploration of stone and metal plate lithography. Materials fee: $25.00. (Prerequisite: ART 105, 207, or permission of instructor. Next offered: Fall 1989.)

ART 419 3 Credits Fall, Spring
Life Drawing (1+4) h
Drawing from life, the study of artistic anatomy. Materials fee: $30.00. (Prerequisite: ART 305 or permission of instructor.)

ART 427 3 Credits Every Third Spring
Relief (1+4) h
Woodcut and monotype with emphasis on color. Materials fee: $25.00. (Prerequisites: ART 105, 207, and 213, or permission of instructor. Next offered: 1989-90.)

ART 437 3 Credits Every Third Fall
Intaglio (1+4) h
Intaglio printmaking with emphasis on experimentation and color photo intaglio printing. Materials fee: $25.00. (Prerequisites: ART 105, 162, 207, or permission of the instructor. Next offered: 1990-91.)

ART 441 3 Credits Every Third Spring
Lost Wax Casting (1+4) h
The design and execution of jewelry and other small metal objects by lost wax casting. Materials fee: $35.00. (Prerequisite: ART 409 or permission of the instructor. Next offered: 1990-91.)

ART 442 3 Credits Every Third Spring
Nonferrous Forging (1+4) h
A study of the design and execution of hammer forged nonferrous metal objects. Materials fee: $35.00. (Prerequisite: ART 409 or permission of instructor. Next offered: 1989-90.)

ART 443 3 Credits Every Third Spring
Holloware (1+4) h
A study of the design and construction of holloware by raising, sinking, and fabrication. Materials fee: $35.00. (Prerequisite: ART 409 or permission of instructor. Next offered: 1989-90.)

ART 447 3 Credits Every Third Spring
Silkscreen (1+4) h
Silkscreen printing with photo process. Materials fee: $25.00. (Prerequisites: ART 105, 162, 207, or permission of the instructor. Next offered: 1989-90.)

ART 450 3 Credits Every Third Fall
Raku Pottery (1+4) h
A one semester experience in Raku pottery including kiln building for raku bodies, glazes and decorations. Materials fee: $35.00. (Prerequisite: ART 201 or permission of instructor. Next offered: 1990-91.)

ART 451 3 Credits Every Third Spring
Earthenware (1+4) h
A one semester experience in earthenware pottery including appropriate bodies, glazes, decorations and firing techniques. Materials fee: $35.00. (Prerequisite: ART 201 or permission of instructor. Next offered: 1990-91.)

ART 452 3 Credits Every Third Fall
Porcelain (1+4) h
A one semester experience in porcelain including appropriate bodies, glazes, decorations and firing techniques. Materials fee: $35.00. (Prerequisite: ART 201 or permission of instructor. Next offered: 1989-90.)

ART 453 3 Credits Every Third Spring
Kiln Design and Construction (1+4) h
A one semester experience in kiln design and construction including building a full sized kiln. Materials fee: $35.00. (Prerequisite: ART 201 or permission of instructor. Next offered: 1989-90.)

ART 454 3 Credits Every Third Fall
Vapor Glazing (1+4) h
A one semester experience in "salt glazing" (i.e. vapor glazing) including clay, glazes, decorative techniques and kilns. Materials fee: $35.00. (Prerequisites: ART 201 and permission of instructor. Next offered: 1989-90.)

ART 455 3 Credits Spring
Studio Glass (1+4) h
Studio participation in cold glass and limited hot glass techniques. Materials fee: $35.00. (Prerequisites: Advanced standing or permission of instructor.)

ART 471 3 Credits Spring
Computer Art (1+4)
Production and reproduction techniques for digital painting, images manipulation and typography. (Prerequisites: ART 371; or CS 201 or equivalent, ART 105 and one of ART 161, 162 or 163.)

ART 499 1-3 Credits Fall/Spring
Thesis Project
Directed work toward individual exhibition, completed outside regularly scheduled classes. Required for B.F.A. candidates. (Prerequisites: Senior standing.)

Atmospheric Science

ATM 636 3 Credits Alternate Fall
Physics of the Lower Atmosphere (3+0)

ATM 646 3 Credits Alternate Spring
Dynamics of the Atmosphere and Ocean (3+0)

ATM 656 3 Credits Alternate Spring
Atmospheric Circulation, Weather and Climate

Automotive

AUTO 080 2 Credits As Demand Warrants
Driver and Safety Education (2+0)
Drivers Education for the beginning driver. Course will cover the Alaska Driver's Manual and all material necessary to gain an Alaska Driver's Permit. It will also include defensive driving methods for accident-free driving and basic mechanical information.

AUTO 081 1 Credit As Demand Warrants
Behind-the-Wheel Training (0+3)
This course will provide practical driver training in actual situations. Expected student outcome is obtaining a State of Alaska driver's license. (Prerequisite: Must have a valid Alaska Driver's Permit.)

AUTO 100 1 Credit As Demand Warrants
Introduction to Small Engine Repair (1+0)
A course designed to teach the parts and functions of a small engine and its electrical system. Proper dismantling procedures, cleaning and reassembly techniques, gasket-making, lubrication, troubleshooting, and minor repairs will be covered.

AUTO 103 1 Credit As Demand Warrants
Auto Tune-Up (1+0)
A dual purpose course servicing both as an introduction to a more advanced course and also as a consumer interest course. Instruction will focus attention on vehicle maintenance by the operator with tools commonly available. It will be a 'hands-on' approach to basic troubleshooting and maintenance.

AUTO 170 1 Credit As Demand Warrants
Snowmachine Maintenance and Repair (1+0)
An introduction to the fundamental skills necessary for the operation and repair of a snow-machine. Specific areas that are covered are engine tune-up, lubrication, belt and track repair, alignment, and basic problems encountered during operation.

Aviation

AVTY 100 4 Credits As Demand Warrants
Private Pilot Ground School (4+0)
Study of aircraft and engine operation and limitations, aircraft flight instruments, navigation, navigation computers, national weather information and dissemination service. Federal Aviation Regulations, flight information publications, radio communications, and radio navigation in preparation for FAA Private Pilot-Airplane written exam.

AVTY 101 2 Credits As Demand Warrants
Private Pilot Flight Training (2+0)
Flight instruction will be arranged by student through approved pilot school or independent flight instructor. Training will be in accordance with current Federal Aviation Regulations. Course completion requires awarding of Private Pilot certificate. Department approval required.

AVTY 102 4 Credits As Demand Warrants
Commercial Ground Instruction (4+0)
Advanced study of aircraft performance, airplane systems (including complex single engine, multi-engine and turboprop aircraft), navigation, regulations and meteorology. In addition, employment considerations for commercial pilots are surveyed. This course will prepare students to take the FAA Commercial Pilot-Airplane written examination.

AVTY 103 2 Credits As Demand Warrants
Commercial Flight Training (2+0)
Flight instruction will be arranged by student through approved pilot school or independent flight instructor. Training will be in accordance with current Federal Aviation Regulation. Course completion requires awarding of Commercial Pilot certificate. (Prerequisite: Private Pilot certificate, AVTY 102 or concurrent enrollment, or passing score on FAA Commercial Pilot written exam. Department approval required.

AVTY 105 1 Credit As Demand Warrants
Seaplane Flight Training (1+0)
Flight instruction will be arranged by student through approved pilot school or independent flight instructor. Training will be in accordance with current Federal Aviation Regulations. Course completion requires awarding of Single-Engine Sea Rating. (Prerequisite: Private Pilot certificate or higher, department approval required.)

AVTY 107 1 Credit As Demand Warrants
Multi-Engine Flight Training (1+0)
Flight instruction will be arranged by student through approved pilot school or independent flight instructor. Training will be in accordance with current Federal Aviation Regulations. Course completion requires awarding of Multi-Engine Rating. (Prerequisite: Private Pilot certificate or higher, department approval required.)

AVTY 108 1 Credit As Demand Warrants
Introduction to Skis (1+0)
Pilot instruction with a certified flight instructor or flight school to introduce techniques of ski-lane operation and cold weather maintenance. The student is responsible for making arrangements for an appropriate aircraft, instructor, and financing. (Prerequisite: Private Pilot Certificate.)

AVTY 109 1 Credit As Demand Warrants
Glider Flight Training (1+0)
Flight instruction will be arranged by student through approved pilot school or independent flight instructor. Training will be in accordance with current Federal Aviation Regulations. Course completion requires awarding of Glider and Private or Commercial Pilot Certificate with a Glider category rating. (Prerequisite: Department approval.)

AVTY 110 1 Credit As Demand Warrants
Biennial Flight Review (1+0)
A review of Federal Aviation Regulations, air traffic control procedures, communications, normal and emergency aircraft procedures, and aircraft performance. (Prerequisite: Student must hold at least a Private Pilot certificate.)

AVTY 111 3 Credits As Demand Warrants
Fundamentals of Aviation (3+0)
A comprehensive introduction to basic concepts associated with the airplane and its environment. The study of the airplane and its components, basic aerodynamics, factors which affect airplane performance, flight instruments, aircraft systems, radio communications and air traffic control, and aircraft weight and balance are included as major topic areas for this course.

AVTY 112 3 Credits As Demand Warrants
Fundamentals of Aviation II (3+0)
An introduction to a number of topics associated with aviation. These include meteorology, Federal Aviation Regulations, aviation charts, radio and dead reckoning navigation and physiological factors that affect flight. Provides the opportunity to explore aviation in general as one acquire fundamental knowledge and skills related to it. This course complements AVTY 111 but does not require it as a prerequisite.

AVTY 117 3 Credits As Demand Warrants
Aviation Weather (3+0)
Weather and its effects on air transportation and air traffic control. Aviation weather reports and forecasts. Methods of weather distribution including teletype, voice lines, broadcasts, and other systems used by the U.S. Government and airway users.

AVTY 119 1 Credit As Demand Warrants
Flight Simulator Instruction Basic Procedures (0+3)
An introduction to the operation and use of the LINK GAT-I flight simulator and selected practice in basic flight maneuvers, procedures and techniques. This individualized simulate flight training may serve as a valuable supplement to both Private Pilot Ground School and actual flight training. (Prerequisite: AVTY 100 or concurrent enrollment in AVTY 100, AVTY 111 or AVTY 112.)

AVTY 155 1-3 Credits As Demand Warrants
Preventive Maintenance
The course is designed for the pilot-owner who must make his/her decisions as to what maintenance should be done. A knowledge of the mechanics of the airplane, its power plant and systems will enable the student to evaluate any malfunction and will help make any decisions more accurate. (Prerequisite: AVTY 100 or permission of instructor.)

AVTY 200 4 Credits As Demand Warrants
Instrument Ground School (4+0)
Instrument operation in detail, altitude instrument flying, air traffic control and navigation facilities, pilot responsibilities. IFR enroute charts, approach plates, airspace and airway route system, ATC operations and procedures. Federal Aviation Regulations, flight planning, medical facts about pilots, meteorology, similar flights. Course includes visits to FAA RAPCO and ARTCC facilities. (Prerequisite: AVTY 100, passing score on the FAA Private Pilot Written Exam or permission of the instructor. Must complete AVTY 102- Commercial Ground School.)

AVTY 202 3 Credits As Demand Warrants
Flight Instructor Ground School (3+0)
Preparation for the FAA Certified Flight Instructor or Advanced Ground Instructor written examination. (Prerequisite: Commercial Pilot certificate or permission of instructor.)

AVTY 203 2 Credits As Demand Warrants
Flight Instructor Flight Training (2+0)
Flight instruction will be arranged by student through approved pilot school or independent flight instructor. Training will be in accordance with current Federal Aviation Regulations, Course completion requires awarding of Certified Flight Instructor Certificate. (Prerequisite: Commercial Pilot certificate with Instrument Rating, AVTY 202 or concurrent enrollment, or passing score on FAA Flight Instructor written exams. Department approval.)

AVTY 205 3 Credits As Demand Warrants
Instrument Instructor Flying (3+0)
Preparation for certification as an Instrument Flight Instructor. (Prerequisite: Commercial Flight Instructor certificate, and department approval.)

AVTY 206 4 Credits As Demand Warrants
ATP Ground Instruction (4+0)
Preparation for the FAA Airline Transport Pilot written examination. (Prerequisite: Compliance with FAR 61.151 and 61.55 or department permission.)

AVTY 207 2 Credits As Demand Warrants
ATP Flying (2+0)
Qualification for single engine or mult-engine FAA Airline Transport Pilot certificate. (Prerequisite: Commercial Pilot Certificate, 1500 hours of flight time as pilot or the equivalent (as described in FAR 61.55); AVTY 206 or passing score on FAA Airline Transport Pilot written exam; current FAA First Class Medical certificate.)

AVTY 208 Credits As Demand Warrants
Flight Simulator Operation (3+0)
Advanced training in a flight simulator. Recommended for instrument flight simulator. Recommended for instrument flight and ground instructor, airline transport pilot, and aircraft dispatcher applicants. (Prerequisite: Private Pilot certificate (or higher), Instrument Rating, Certified Flight Instructor-Instrument or Instrument Ground Instructor certificate, or department permission.)

AVTY 210 1 Credit As Demand Warrants
Simulated Flight Instruction: Advanced Procedures (0+3)
Required for persons desiring to utilize the GAT-I Flight Simulator. Use of the flight simulator must be individually scheduled through the aviation department. A flight or ground instructor approved by UAF must direct and accompany the student while the simulator is in operation. Individuals may use the time accumulated to meet the requirements of advance ratings or flight recently as specified in Part 16 of the Federal Aviation Regulations.

AVTY 211 3 Credits As Demand Warrants
Instrument Flying (3+0)
Flight instruction provided by an appropriate pilot school designed to qualify commercial pilot for Instrument Rating. Training will be in accordance with current Federal Aviation flight training directives. Approximately 40 hours flying. Course completion require the awarding of Instrument Rating by an FAA flight inspector. (Prerequisite: Private or Commercial Pilot Certificate or AVTY 200 (concurrent enrollment allowed) or passing score on FAA Private Commercial Pilot Written Exam or permission of department.)

AVTY 226 4 Credits As Demand Warrants
Flight Engineer Ground School (4+0)
A comprehensive examination of the major systems of one of the following aircraft: Turbojet (B-727, DC-8, B-707); Turboprop (L-382, L-188); or Reciprocating (DC-6). Prepares the student for the FAA Flight Engineer written examination. (Prerequisite: FAA Commercial Pilot License & Instrument Rating, or equivalent, and department approval.)

AVTY 231 3 Credits As Demand Warrants
Arctic Survival (3+0)
Use of principles, procedures, techniques, and equipment to survive extreme arctic conditions and to assist in safe recovery. Lab time required. Materials fee: $35.00.

AVTY 232 3 Credits As Demand Warrants
Aviation Astronomy and Navigation (3+0)
Introduction to air navigation and astronomy, including charts, equipment, star and constellation identification, and calculations.

AVTY 233 1 Credit As Demand Warrants
Loran C Navigation (1+0)
The student will gain sufficient understanding of the theory of Loran 'C' to recognize positive and adverse conditions regarding its use, to be able to enter way points already programmed into the computer and effectively navigate them and to learn to preprogram the computer for enroute and arrival points to within 100 feet.

AVTY 235 3 Credits As Demand Warrants
Elements of Weather (3+0)
Weather as it affects aircraft operators with an emphasis on Interior Alaska.

AVTY 239 4 Credits As Demand Warrants
Aircraft Dispatcher (4+0)
Coordinating functions that must be performed involving the aircraft and other departments of an airline business. (Prerequisite: Those wanting to be eligible for aircraft dispatcher certificate must be 23 years of age.)

Biology

BIOL 103 4 Credits Fall and Spring
Biology and Society (3+3) n
Introduction to the fundamental principles of biology; emphasis on their application to man in the modern world. Course is designed for non-science majors. Includes lectures, laboratory demonstrations, experiments, and discussions of contemporary biological topics. This course may not be used as biology elective credit for a major in biological science. Laboratory fee: $10.00-$40.00. (Offered every Fall at the Northwest Campus.)

BIOL 104 3 Credits Fall and Spring
Natural History of Alaska (3+0) n
Aspects of the physical environment peculiar to the north and important in determining the biological setting; major ecosystem concepts to develop an appreciation for land use and wildlife management problems in both terrestrial and aquatic situations. This course may not be used as biology elective credit for a major in biological science.

BIOL 105 4 Credits Fall
BIOL 106 4 Credits Spring
Fundamentals of Biology I and II (3+3) n
Principles of biology for the science major. First semester: cell structure, metabolism, genetics and evolution. Second semester: plant and animal structure and function, ecology. BIOL 105 is required for BIOL 106. Laboratory fee: $10.00. (Prerequisite: high school chemistry recommended.)

BIOL 111 4 Credits Fall
BIOL 112 4 Credits Spring
Human Anatomy and Physiology I and II (3+3) n
Integrated view of human structure and function for students in nursing, therapy, physical education, and art. BIOL 111 will cover cells, tissues and organs, skeletal and muscle systems, the nervous system, and integument. BIOL 112 examines circulatory, respiratory, digestive, excretory, endocrine, and reproductive systems. BIOL 111 is required for BIOL 112. These courses may not be used as biology elective credit for majors in biological sciences. Laboratory fee: $10.00.

BIOL 205 3 Credits Alternate Spring
Vertebrate Anatomy (1+6) n
Anatomy of bony fishes, birds, and mammals. Laboratory dissections emphasized. Laboratory fee: $10.00. (Prerequisites: BIOL 105-106. Next offered: 1989-90.)

BIOL 210 4 Credits Spring
Animal Physiology (3+3) n
Animal function, including respiration, digestion, circulation, nerve and muscle function, hormones, and reproduction. Laboratory fee: $10.00. (Prerequisites: BIOL 105-106; Chem. 103 and 104 or 105 may be taken concurrently.)

BIOL 222 4 Credits Fall
Biology of the Vertebrates (3+3) n
An introduction to the fishes, amphibians, reptiles, birds, and mammals emphasizing systematics, evolution, structure, and function. Laboratory fee: $10.00. (Prerequisites: BIOL 105-106.)

BIOL 240 4 Credits Fall
Beginnings in Microbiology (3+3)
Basic and applied microbiology for students who are not majoring in biology but wish to learn about the role that microorganisms play in human health and life. Laboratory Fee: $20.00

BIOL 271 4 Credits Fall
Principles of Ecology (4+0) n
Introduction to the basic principles of ecology and evolutionary biology. Environmental factors, their causation and influence upon plants and animals. Basic population biology: population structure, growth, and regulation. The mechanisms of evolutionary change in populations. The organization of biotic communities. The structure and function of ecosystems. (Prerequisites: BIOL 105 and 106.)

BIOL 305 4 Credits Fall
Invertebrate Zoology (3+3) n
Classification, structure, function, evolution, and life histories of invertebrate animals. Laboratory fee: $10.00. (Prerequisites: BIOL 105-106, 210, and 271.)

BIOL 307 3 Credits Fall
Parasitology (2+3) n
Structure, function, life history, and ecology of animal parasites. Laboratory fee: $10.00. (Prerequisites: BIOL 105-106 and BIOL 222 or permission of instructor.)

BIOL 308 3 Credits Spring
Principles of Evolution (3+0) n
An introduction to the mechanisms of, and evidence for, the evolution of living systems. The coding and transmission of genetic information in populations, population variability, change, and stabilization. (Prerequisites: BIOL 105-106, 362, 271, or permission of the instructor.)

BIOL 317 5 Credits Alternate Spring
Comparative Anatomy of Vertebrates (2+9) n
Anatomy, phylogeny and evolution of the vertebrates. Laboratory fee: $10.00. (Prerequisites: BIOL 105-106. Next offered: 1990-91.)

BIOL 328 3 Credits Spring
Biology of Marine Organisms (3+0) n
Introduction to biology of marine organisms: ocean as a habitat, distribution, classification, functional morphology, and general biology of the major biological groups; man and the oceans. (Prerequisite: Upper division standing in a biologically oriented major.)

BIOL 342 4 Credits Spring
Microbiology (3+3) n
A survey of morphology and physiology of microorganisms (viruses, bacteria, fungi, algae and protozoans). The role of these organisms in the environment and their relationship to humans are considered. Concepts of immunology are introduced. The laboratory stresses aseptic techniques for handling microorganisms. Laboratory fee: $10.00. (Prerequisites: BIOL 105-106.)

BIOL 361 4 Credits Alternate Spring
Cell Biology (3+3) n
Detailed structure, including ultrastructure, and function of the cell: isolation, composition, and biochemical properties of cell organelles and their integration. Laboratory fee: $10.00. (Prerequisites: A year each of college chemistry and biology. Next offered: 1990-91.)

BIOL 362 4 Credits Fall
Principles of Genetics (3+3) n
Principles of inheritance; physico-chemical properties of genetic systems. Laboratory fee: $10.00. (Prerequisites: BIOL 105-106.)

BIOL 382 3 Credits Alternate Fall
Biology of the Freshwater Fish of Alaska (3+0)
Life histories of Alaskan freshwater fish emphasizing species sought by fishermen. Emphasis is on reproduction, age, growth, migration, food, inter-relationships and habitat requirements. (Prerequisite: Biol 105-106 or permission of instructor. Next offered: 1989-90.)

BIOL 406 4 Credits Alternate Spring
Entomology (3+3) n
Biology of insects and related arthropods, with emphasis on anatomy, physiology, behavior, ecology, and evolution. Laboratories emphasize identification. Laboratory fee: $10.00. (Prerequisites: BIOL 105-106 and 271.)

BIOL 407 3 Credits Alternate Fall
Aquatic Entomology (2+3)
Ecology, taxonomy, anatomy, physiology and evolution of aquatic insects. Laboratories emphasize identification and field/faboratory techniques. Laboratory fee: $10.00. (Prerequisites: BIOL 105-106 and 271, BIOL 473 recommended or permission of instructor. Next offered: 1990-91.)

BIOL 414 4 Credits Alternate Fall
Comparative Physiology (3+3) n
Functional variations and relationships among animals; respiration, cardiovascular systems, metabolism, temperature regulation, osmoregulation excretion, nerve and muscle function. Laboratory fee: $10.00. (Prerequisites: BIOL 271, CHEM 106; CHEM 321 and BIOL 361. Next offered 1989-90.)

BIOL 418 4 Credits Alternate Fall
Developmental Biology (3+3) n
Structural and biochemical aspects of development of multicellular organisms. Laboratory stresses study of vertebrate embryos. Laboratory fee: $10.00. (Prerequisites: BIOL 105-106, 210 or permission of instructor. Next offered: 1989-90.)

BIOL 423 4 Credits Fall
Ichthyology (3+3) n
Major groups of fishes, emphasizing the fishes of northwestern North America. Classification structure, evolution, general biology, and importance to man of the major groups. Laboratory fee: $10.00. (Prerequisites: BIOL 222, and either BIOL 205, or 317; or permission of the instructor.)

BIOL 425 3 Credits Fall
Mammalogy (2+3) n
Variety of mammals, their behavior, life histories, identification, phylogeny and systematics, morphology, distribution, and zoogeography. Laboratory fee: $10.00. (Prerequisites: BIOL 222, and either BIOL 205, or 317; or permission of instructor.)

BIOL 426 3 Credits Spring
Ornithology (2+3) n
The evolution, anatomy, physiology, distribution, migration, breeding biology of birds and their classification and identification. Laboratory fee: $10.00. (Prerequisites: BIOL 222, and either 205 or 317, or permission of instructor. Concurrent enrollment in BIOL 479 is recommended.)

BIOL 441 3 Credits Fall
Animal Behavior (2+3) n
Genetic and physiological bases of behavior, evolutionary and ecological principles of individual and social behavior, sociobiology, and the techniques of behavioral observation and analysis. Laboratory fee: $10.00. (Prerequisites: BIOL 210 and 271; or permission of instructor; Recommended: BIOL 308.)

BIOL 442 5 Credits Alternate Fall
Bacteriology and Immunology (3+6) n
Morphology, physiology and systeematics of bacteria. Introduction to microbial pathogenesis and concepts of immunology. Laboratory fee: $10.00. (Prerequisites: BIOL 342, CHEM 321 or permission of instructor. Next offered: 1990-91.)

BIOL 443 3 Credits As Demand Warrants
Microbial Ecology (2+3) n
Laboratory investigation of ecological activity and impact of bacteria and fungi. Isolation and study of important genera. Laboratory fee: $10.00. (Prerequisites: BIOL 342, 271, or 442; or permission of instructor.)

BIOL 445 4 Credits Spring
Molecular and Evolutionary genetics (3+3)
(Same as CHEM 445)
The study of structure, function and evolution of hereditary molecules (nucleic acids) and their proteins. (Prerequisite: BIOL 362.)

BIOL 452 3 Credits Alternate Spring
Cytogenetics (2+3) n
Chromosome form and function emphasizing gene structure, DNA replication, chromosomal mutation and population cytogenetics. Laboratory fee: $10.00. (Prerequisites: BIOL 362 or permission of instructor. Next offered: 1990-91.)

BIOL 470 3 Credits Alternate Fall
Ecological Genetics (2+3)
Dynamics of gene frequencies and the quantitative genetics of ideal and natural populations, with emphasis on tools and methods of population genetics. Laboratory fee: $10.00. (Prerequisites: BIOL 308 and STAT 301. Next offered: 1989-90.)

BIOL 471 3 Credits Spring
Population Ecology (3+0) n
The biology of populations of plants and animals, including population structure, natality, mortality, population growth, the regulation of population size, and population interactions in herbivory, predation, and parasitism. (Prerequisite: BIOL 271.)

BIOL 472 3 Credits Fall
Communities and Ecosystems (3+0) n
An analysis of the structure of plant and animal communities and their organization. The structuring forces of competition, predation, herbivory, mutualisms, and the flow of energy and nutrients will be covered. Latitudinal gradients in species richness and biogeography will also be discussed. (Prerequisite: BIOL 271.)

BIOL 473 3 Credits Fall
Limnology (2+3)
Physical, chemical and biological characteristics of fresh water, emphasizing ecological aspects important to fish and other organisms. Laboratory fee: $10.00. (Prerequisites: BIOL 271, CHEM 106 or permission of instructor.)

BIOL 477 3 Credits Alternate Spring
Ecology of Streams and Rivers (2+3)
Natural history of organisms and biological processes in rivers and streams. Laboratories emphasize analyses of actual data and samples. Laboratory fee: $10.00. (prerequisites: BIOL 271, BIOL 473 recommened, or permission of instructor. Next offered: 1990-91.)

BIOL 478 2 Credits Spring
Field Ecology (0+3) n
An intensive experience in the collection and interpretation of ecological data. The course consists of concentrated study for 10-12 days in early May. Students will engage in the design, execution, and analysis of field projects dealing with various aspects of ecology. Course is graded pass/fail. Field trip fee to be announced. Laboratory fee: $10.00. (Prerequisites: BIOL 271, 471 or 472 [may be taken concurrently], and permission of instructor.)

BIOL 479 2 Credits Spring
Ornithology Field Trip (0+3) n
Techniques of field ornithology, emphasizing identification of birds and bird-habitat relationships. The course consists of preparation during the spring semester followed by a field trip of 10-12 days in early May. Students must share in expenses. Field trip fee to be announced. Laboratory fee: $10.00. (Prerequisites: BIOL 426, may be taken concurrently, and permission of instructor.)

BIOL 480 3Credits Alternate Fall
Water Pollution Biology (3+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 271 and 473 or permission of instructor. Next offered: 1989-90.)

BIOL 601 3 Credits Alternate Spring
Radioisotopic Techniques (2+3)

BIOL 602 3 Credits Fall
Research Design (3+0)

BIOL 610 3 Credits Alternate Fall
Regulation of Biological Processes (3+0)

BIOL 614 2 Credits Alternate Spring
Grazing Ecology (2+0)
(Same as WLF 614)

BIOL 618 2 Credits Alternate Spring
Biogeography (2+0)

BIOL 619 2 Credits Alternate Fall
Marine Mammals (1+3)

BIOL 624 3 Credits Alternate Fall
Physiological Ecology: Temperature Regulation and Thermal Adaptation (2+3)

BIOL 625 3 Credits Alternate Spring
Physiological Ecology: Energetics and Nutrition (2+3)

BIOL 626 3 Credits Alternate Fall
Physiological Ecology: Vertebrate Reproduction (2+3)

BIOL 627 3 Credits Alternate Spring
Chemical Ecology (3+0)

BIOL 629 3 Credits Alternate Fall
Advanced Animal Behavior (3+0)

BIOL 637 2 Credits Alternate Fall
Modern Evolutionary Theory (2+0)

BIOL 638 1 Credit Alternate Fall
Seminar in Ecology and Evolutionary Biology (2+0)

BIOL 650 3 Credits Alternate Fall
Fish Ecology (2+3)

BIOL 678 3 Credits Alternate Spring
Tropical Ecology Field Course (0+3+Arr)

BIOL 680 4 Credits Alternate Fall
Data Analysis in Biology (3+3)
(Same as STAT 680)

Botany

BOT 239 4 Credits Spring
Introduction to Plant Biology (3+3) n
Structure, function, ecology, and evolutionary patterns of the major groups of plants. Laboratory fee: $10.00. (Prerequisites: BIOL 105-106.)

BOT 331 4 Credits Spring
Systematic Botany (2+6) n
Classification of flowering plants with emphasis on Alaskan flora; discussion of taxonomic principles and both classical and experimental methods of research. Preregistration is required to insure that each student will prepare a plant collection. Laboratory fee: $10.00. (Prerequisite: BOT 239 or permission of the instructor. BIOL 362 recommended.)

BOT 333 3 Credits Alternate Fall
Biology of the Non-Vascular Plants (2+3) n
The structure, function, comparative development, taxonomy, phylogeny and life histories of non-vascular cryptogams (algae, excluding blue greens, fungi, lichens, mosses and hepatics). Laboratory fee: $10. (Prerequisite: BOT 239. Next offered: 1989-90.)

BOT 334 4 Credits Alternate Fall
Structure and Function in Vascular Plants (3+3) n
Morphology, anatomy and physiology of vascular plants, stressing the interrelationships between development, anatomy, growth, water relations, photosynthesis, transport and metabolism. Laboratory fee: $10.00. (Prerequisite: BOT 239. Next offered: 1989-90.)

BOT 416 3 Credits Alternate Spring
Plant Physiology (2+3) n
The physiology of vascular plants, including growth, development, water relations, photosynthesis, transport and metabolism. Laboratory fee: $10.00. (Prerequisites: BOT 239 and CHEM 106; BIOL 361 and CHEM 321 recommended. Next offered: 1990-91.)

BOT 474 4 Credits Alternate Fall
Plant Ecology (3+3) n
Principles and contemporary topics in plant ecology. Topics covered include autecology, community ecology, ecosystem ecology and evolutionary ecology. Laboratory fee: $10.00. (Prerequisites: BOT 239, BIOL 271, STAT 301. Next offered: 1990-91.)

BOT 475 2 Credits Alternate Fall
Plant Communities of Alaska-Field Course (1+3)
A series of field trips to the plant communities of interior Alaska; emphasis on identification of vascular and non-vascular plants and the processes affecting the structure and evolution of Alaskan plant communities. Laboratory fee: $10.00. (Prerequisites: BOT 239, permission of instructor. Next offered: 1989-90.)

BOT 476 4 Credits Alternate Spring
World Vegetation and Flora (3+3)
Survey of vegetation and flora of the world; emphasis on latitudinal and elevational patterns, climatic controls, community convergence, and taxonomy and distribution of major plant families. Laboratory fee: $10.00. (Prerequisites: BOT 239 and BIOL 271 or BOT 331. Next offered: 1989-90.)

BOT 674 3 Credits Alternate Spring
Advanced Plant Ecology: Populations and Communities (2+3)

BOT 675 3 Credits Alternate Fall
Plant Physiological Ecology (2+3)

BOT 676 3 Credits Alternate Spring
Reproductive Biology of Flowering Plants (3+0)

Business Administration

Admittance to upper division School of Management courses will be granted only to students with junior standing or above who have completed all required 100 and 200 level courses in Accounting, Business Administration, Economics and Mathematics. The exceptions to this include BA 301, BA 331 and BA 332. Any other exceptions require the approval of the BA department head.

BA 100 3 Credits Fall and Spring
Introduction to Data Processing and BASIC Language (3+0)
A general introductory business course designed to provide students with an overview of business applications of computers. Topics covered are: machine organizations, problem formulation, utilization of BASIC programming language in business applications, information flow management, applications of automatic data processing systems to include input-output procedures, and the utilization of business application programs available to the School of Management. Materials fee: $20.00. (Not for School of Management students. This course will not substitute for BA 101, Introduction to Management Information systems.)

BA 101 3 Credits Fall and Spring
Introduction to Management Information Systems (3+0)
An introduction to the concepts, skills and software required for today's business education. Students will become familiar with selected current business software applications. Special emphasis will be placed on acquiring proficiency in the use of required School of Management software programs. Materials fee: $20.00.

BA 151 3 Credits Fall and 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.

BA 160 3 Credits Fall
Tourism Principles and Practices (3+0)
Forces which influence the international and domestic hospitality, leisure, travel, and recreation industries. Socio-economic models and measure of regional impact, demand, and supply.

BA 201 3 Credits Alternate Spring
COBOL (2+2)
Training and practice in writing problems in the COBOL language. Multiple file processing, editing, and report generating routines. Materials fee: $20.00. (Prerequisite: BA 101 or permission of instructor. Next offered: 1989-90.)

BA 220 3 Credits Alternate Fall
Basic Programming Languages (3+0)
Programming in selected computer languages including ASSEMBLER, RPG, and machine language. Materials fee: $20.00. (Prerequisite: BA 101. Next offered: 1989-90.)

BA 253 1-3 Credits Fall-Spring-Summer
Internship in Business (0+1-3)
Supervised work experience in an approved position which is related to the student's career interests or objectives. Number of credits given will depend on types of position and amount of time worked by the student. No student can count more than eight internship credits towards a degree. (Prerequisite; approval of program or department head.)

BA 301 3 Credits Fall
Processes of Management (3+0)
A systematic examination of the basic functions of management with particular attention on the human side of the organization. Modes of communication and coordination are evaluated in terms of the need for planning, controlling, and decision-making among the organizational components. An overall framework for effective integration of the distinct processes is emphasized. (Prerequisites: Junior standing or permission of instructor.)

BA 303 3 Credits Fall
Advanced Leadership (3+1)
(Same as MILS 303)
Comprehensive analysis of leadership styles and functions applicable to formal organizations. Lab: Advanced leadership development including enrichment seminars. (Prerequisite: Junior standing.)

BA 307 3 Credits Fall
Personnel Management (3+0)
Personnel practice in industry, analysis of labor-management problems, methods and administration of recruiting, selecting, training, and compensating employees, and labor laws and their applications. Materials fee: $10.00. (Prerequisites: BA 301 or permission of instructor.)

BA 310 3 Credits Fall and Spring
Intermediate Management Information Systems (3+0)
The use of the micro computer for developing and using decision support systems for management analysis in business is emphasized. Concepts and skills acquired in this course are needed for other upper division business courses. Materials fee: $20.00. (Prerequisite: BA 101.)

BA 325 3 Credits Fall and Spring
Financial Management (3+0)
Intensive analysis of the methods of corporate financial planning and control, asset management, capital budgeting, and financial markets and instruments. (Prerequisites: ACCT 102, ECON 201, 202, 226. Highly recommended MATH 162 or equivalent, and ECON 227.)

BA 326 3 Credits Spring
Principles of Advertising (3+0)
(Same as J-B 326)
Theory and practice of advertising: including strategy, media use, creation and production of advertisements, and measurement of advertising effectiveness. (Prerequisite: Junior standing.)

BA 327 3 Credits Spring
Collective Bargaining and Labor Relations (3+0)
An examination of labor law and current management practices in administering collective bargaining agreements, emphasizing recent problems, developments and trends in union management relations, negotiating, arbitration and unfair labor practices. (Prerequisites: BA 301, BA 307.)

BA 331 3 Credits Fall and Spring
The Legal Environment of Business (3+0)
An introduction to the legal environment of business and management. Topics include the judicial system, legal processes, administrative procedures, product safety and advertising, debtor-creditor relations, issuing and trading securities, restraints of trade, monopolies, mergers, price discrimination, labor-management relations, labor standards and employee safety, business ethics and corporate social responsibility. Materials fee: $10.00. (Prerequisite: Junior standing or permission of instructor.)

BA 332 3 Credits Fall and Spring
Business Law (3+0)
The legal principles essintial to a business person are presented in this course and include: the law of torts, contracts, agency, property, sales transactions, commercial paper, business organizations, government rregulation of business, the uniform commercial code, the uniform partnership act and the uniform limited partnership act. Materials fee $10.00. (Prerequisite: BA 331.)

BA 343 3 Credits Fall and Spring
Principles of Marketing (3+0)
Role of marketing in society and economy. The business firm as a marketing system, and management of the firm's marketing effort. (Prerequisite: ACCT 102, ECON 201, 202, 226.)

BA 350 3 Credits **Fall**
Introduction to Real Estate and Land Economics (3+0)
Study of processes and considerations that influence decisions of individuals and groups concerning real estate investment and utilization. Functions of various types of real estate operators are also considered in the course. (Prerequisites: Junior standing or permission of instructor.)

BA 360 3 Credits **Spring and Fall**
Operations Management (3+0)
An introduction to the operational field of production with emphasis on the design of efficient operating systems. Specific areas considered are: forecasting, facilities planning, inventory management, production scheduling, and job design as applicable to all types of organizations. Materials fee: $20.00. (Prerequisites: BA 101 or equivalent, ACCT 102, ECON 201, 202, 226. Highly recommended, MATH 162 or equivalent and ECON 227.)

BA 372 3 Credits **Spring**
Hotel Administration (3+0)
An intensive examination of the practices and concepts necessary for successful hotel operation in Alaska including but not limited to management systems financing of hotels, budgeting and food costing, housekeeping, and front office management. (Prerequisites: BA 160, BA 253 and BA 301.)

BA 375 3 Credits **Fall**
Marketing of Hospitality Service (3+0)
Principles of marketing applied to service industries, advertising, promotion, public relations, and personal selling to achieve profitable public recognition and good will. (Prerequisites: BA 343.)

BA 377 3 Credits **Alternate Fall**
Food and Beverage Management (3+0)
Students will follow the development of a successful food and beverage system from its inception to operation and will deal with the diverse subjects of menu planning, purchasing, preparation, service, and food beverage cost control. (Prerequisites: BA 160, BA 253, BA 301. Next offered: 1990-91.)

BA 378 3 Credits **Fall**
Passenger Transportation Management (3+0)
Students will become familiar with all modern forms of passenger transportation. Main emphasis will be put on those carriers presently operating in Alaska and future development of transportation in Alaska. (Prerequisites: BA 160 and BA 253.)

BA 390 3 Credits **Fall**
Organizational Theory and Behavior (3+0)
A focus on people in organizations from the level of the individual, the group, and the organization. Topics covered include motivation, leadership, communication, group processes, organization structure and design, organizational development, and organizational change. (Prerequisites: PSY 101 or SOC 101.)

BA 410 3 Credits **Fall and Spring**
Systems Analysis and Design (3+0)
The System Development Lifecycle for organizational, departmental, and individual information systems from the point of view both of users and developers. Course project required. Materials fee: $20.00. (Prerequisite: BA 310.)

BA 412 3 Credits **Spring**
MIS Project (0+6)
Application of systems analysis and computer skills in building applications for Fairbanks organizations, both in public and the private sector. Each project will be carried out by a team of students. (Prerequisites: BA 410; concurrent enrollment in BA 414.)

BA 414 3 Credits **Spring**
Database Design for Management Information (3+0)
Advanced systems analysis using modern techniques of data modelling with study of the management and administrative problems in the coordination and management of organization data resources; focusing on the needs of medium-sized and large organizations. (Prerequisite: BA 410.)

BA 418 3 Credits **Spring**
Simulation Modeling for Decision Making (3+0)
The concepts of computer simulation, probability distributions, modeling principles and the language STELLA from basics to experiencing modeling a reasonably complex operating system and making conclusions about the system. (Prerequisites: BA 101 or equivalent, ECON 227, MATH 162, ACCT 102 and BA 360 is recommended.)

BA 423 3 Credits **Fall**
Investment Management (3+0)
Principles of investing in marketable securities from the individual's perspective, the determination of value, analysis of growth, technical analysis, and portfolio management. Materials fee: $10.00. (Prerequisite: BA 325 or equivalent.)

BA 425 3 Credits **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: BA 325.)

BA 430 3 Credits **Fall**
Current Topics in Finance (3+0)
An in-depth consideration of sophisticated and specialized applications of financial management principles. The topics covered will be those most timely to the Alaskan economy. Materials fee: $20.00. (Prerequisites: BA 325.)

BA 436 3 Credits **Spring**
Consumer Behavior (3+0)
Examination of the complex system of communication in marketing. The role of culture and its effects on product discrimination. Social class, personality, symbolism, and persuasion are studied from the marketing manager's point of view. The analysis is extended to the organizational influences on corporate buyers and the impact of buyer behavior on the strategy and tactics of marketing management. (Prerequisites: BA 343, ECON 226 and 227.)

BA 441 3 Credits **Spring**
Promotion Management (3+0)
An examination of the areas of advertising, publicity, sales management, sales promotion, and the interrelationships necessary for effective promotions. (Prerequisite: BA 343.)

BA 443 3 Credits **Spring**
International Marketing (3+0)
There are significant changes occurring in the world with respect to trade. Thus, comparisons of foreign markets with domestic markets are required. If the market is attractive, then it can be enlarged via direct export, direct investment, or joint ventures. All three methods will be examined. The problems of foreign pricing, communications, distribution, and advertising will also be viewed in terms of marketing management and research. (Prerequisite: BA 343.)

BA 445 3 Credits **Fall**
Marketing Research (3+0)
To familiarize students with the basic processes and tools of marketing research with emphasis on utilization of research findings as an integral part of the managerial decision-making process. Students will apply technique of data-gathering and analysis to a marketing problem. (Prerequisites: BA 343 and 436.)

BA 453 3 Credits **Fall and Spring**
Internship in Business Administration (0+var.)
A supervised practical work experience designed to provide students with a meaningful external involvement in their major discipline. Admission dependent upon completion of satisfactory sponsorship arrangements and permission of the instructor. (Prerequisite: Senior standing and permission of instructor.)

BA 456 3 Credits **Spring**
Small Business Management (3+0)
The course focuses on the operations and special problems of the small business with emphasis on both existing firms and new ventures. Subjects to be covered include starting new businesses, buying going concerns, acquiring and operating franchises, establishing lines of credit, management, legal matters, profit planning, pricing, inventory levels, record systems, tax regulations, and employee supervision. Materials fee: $20.00. (Prerequisites: Completion of all 300 level Business Administration, Accounting and Economics common body of knowledge requirements and senior standing in the School of Management.)

BA 460 3 Credits **Fall**
International Business (3+0)
An analysis of the relationships among nations with particular emphasis on the business, economic, and sociocultural institutions that influence the performance of managers. Formulation of objectives, strategies, and organizational structures within the context of international diversity will be addressed. (Prerequisite: senior standing. All 300 level requirements completed.)

BA 461 3 Credits **Spring**
International Finance (3+0)
A study of the financing of foreign investment projects including foreign capital markets, financing exports, hedging foreign exchange risks, and capital budgeting in an international setting. (Prerequisites: BA 325.)

BA 462 3 Credits Fall and Spring
Administrative Policy (3+0)
An advanced case course which focuses on the questions of organizational purpose and design through the eyes of the general manager. Marketing, management, and financial considerations are integrated with external influences to forge strategic planning and control. (Prerequisites: Completion of all 300 level common body of knowledge requirements and senior standing.)

BA 465 3 Credits Alternate Spring
Tourism Destination Planning and Development (3+0)
Tourism resource characteristics, location, and market demand considerations. Analysis of development potential, planning processes and procedures, capital and personnel requirements, and tourism destination developments. (Prerequisites: BA 160, BA 301. Next offered: 1989-90.)

BA 471 3 Credits Alternate Spring
Tourism Seminar (3+0)
A senior seminar bringing together all areas of the travel-tourism industry. Lecturer, guest industry speakers, and the case study method will all be utilized. (Prerequisite: Admission by instructor's permission and upper division standing. Next offered: 1990-91.)

BA 475 3 Credits As Demand Warrants
Transportation and Logistics (3+0)
The essential focus of teaching and research in transportation is on systems planning, especially multimode systems. The program builds upon basic knowledge of the properties of transportation systems components, and the ability to analyze interactions among these components and between the transportation system and its environment. Special consideration will be given to Alaskan transportation problems by experienced specialists. (Prerequisites: ECON 226, BA 343.)

BA 483 3 Credits Spring
Marketing Management (3+0)
Analysis planning and implementation of the total marketing program of an organization: goal setting, marketing mix, problem recognition and analysis, and current issues. (Prerequisite: BA 325, 331, 360 and 445.)

BA 603 3 Credits Fall
Processes of Management (3+0)

BA 604 3 Credits Spring
The Legal Environment of Business (3+0)

BA 605 3 Credits Fall
Management Information Systems (3+0)

BA 606 3 Credits Spring
Quantitative Analysis (3+0)

BA 625 3 Credits Spring
Financial Management (3+0)

BA 643 3 Credits Fall
Marketing Management (3+0)

BA 651 3 Credits Spring
Organizational Theory and Behavior (3+0)

BA 661 3 Credits As Demand Warrants
Human Resources Management (3+0)

BA 680 3 Credits Fall
Seminar in Finance (3+0)

BA 683 3 Credits Spring
Seminar in Marketing (3+0)

BA 684 3 Credits Fall
Production and Operations Management (3+0)

BA 690 3 Credits Spring
Administrative Policy (3+0)

BA 691 3 Credits Fall
Research Design and Methods (3+0)

Chemistry

CHEM 075 3Credits As Demand Warrants
Introduction to Chemical Sciences (3+)
Introduction to chemistry for the non-science major. Includes units of measurement, atomic and molecular structure, chemical bonding, metabolism, radioactivity, oxidation-reduction reactions, solutions, acids and buffers.

CHEM 103 4 Credits Fall
Contemporary Chemistry: Chemistry of the Elements (3+3) n
Introduction to the fundamentals of chemistry with the development of linguistic and mathematical skills and their application to the descriptive and quantitative study of metals, non-metals and their compounds. The course may be used to meet the general laboratory science requirement or for preparation for CHEM 105 or 121. Laboratory fee: $15.00.

CHEM 105 4 Credits Fall and Spring
CHEM 106 4 Credits Fall and Spring
General Chemistry (3+3) n
CHEM 105-106, together, constitute the standard one-year engineering and science-major general chemistry course with laboratory. CHEM 105: Measurements, calculations, atomic and molecular structure, chemical reactions and related energy changes. CHEM 106: Reaction kinetics, equilibrium (including acids and bases), nuclear chemistry, electro-chemistry, chemistry of the elements and an introduction to organic and biochemistry. Laboratory fee: $15.00-$30.00. (Prerequisites: For CHEM 105: high school algebra, high school chemistry or CHEM 103, or consent of instructor. For CHEM 106: CHEM 105.)

CHEM 108 4 Credits Spring
Chemistry and the Modern World (3+3) n
Introduction to the fundamentals of chemistry with an emphasis on the impact of chemistry and the chemical industry on society and the environment. The course is designed for non-science majors and may be used to fulfill part of the natural science requirement or as preparation for Chem 105. Laboratory fee: $15.00.

CHEM 121 4 Credits Spring
Beginnings in Biochemistry (4+0) n
A freshman-level course covering the fundamentals of chemistry as applied to biological systems. It is intended to bridge the gap between a general chemistry course and the biochemical concepts of other health-related sciences. Recommended for health-science degree candidates. (Prerequisites: CHEM 103 or consent of instructor.)

CHEM 202 3 Credits Spring
Basic Inorganic Chemistry (2+3) n
Survey of inorganic chemical properties and reactions with special emphasis on the environment. The laboratory includes synthesis, characterization and analysis. Laboratory fee: $15.00 (Prerequisite: CHEM 106 or permission of instructor.)

CHEM 212 3 Credits Fall
Chemical Equilibrium and Analysis (3+0) n
A systematic study of aqueous chemical equilibrium as applied to chemical analysis, separations, spectrophotometry, potentionmetry, and factors considered in the analytical approach. (Prerequisites: CHEM 106, MATH 107 or equivalent.)

CHEM 213 1 Credit Fall
Quantitative Analysis Laboratory (0+3) n
Laboratory training in quantitative chemical manipulation, including calibration, standardization, analysis using titrimetric and instrumental methods. Laboratory fee: $15.00 (Prerequisites: CHEM 106 and MATH 107.)

CHEM 321 3 Credits Fall and Spring
CHEM 322 3 Credits Fall and Spring
Organic Chemistry (3+0) n
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 for CHEM 321; CHEM 321 for CHEM 322.)

CHEM 324 3 Credits Fall and Spring
Organic Laboratory (1+8) n
A laboratory designed to illustrate modern techniques of isolation, purification, analysis, and structure determination of covalent, principally organic, compounds. Laboratory fee: $15.00. (Prerequisites: CHEM 321 or permission of the instructor.)

CHEM 331 3 Credits Fall
CHEM 332 3 Credits Spring
Physical Chemistry (3+0) n
CHEM 331: Principles of thermodynamics with applications to phase equilibria, solutions, chemical equilibrium and electrochemstry. CHEM 332: Kinetic theory of gases, chemical kinetics, atomic and molecular structure, and spectroscopy. (Prerequisites: CHEM 106, MATH 202, PHYS 104 or 212 or permission of the instructor; CHEM 331 for CHEM 332.)

CHEM 402 3 Credits Fall
Inorganic Chemistry (3+0) n
An in-depth survey of modern inorganic chemistry with application of physical chemistry to the study of the elements and their compounds. Major emphasis is on bonding, periodic properties and coordination chemistry. (Prerequisite or corequisite: CHEM 332.)

CHEM 412 3 Credits **Spring**
Instrumental Analytical Methods (3+0) n
Theory, capabilities and limitations of instruments used in chemical analysis. Subjects include chromatography, mass spectrometry, petentiometry, optical spectroscopy, and nuclear magnetic resonance. (Prerequisites: CHEM 212 and 213; Corequisite: CHEM 332.)

CHEM 433 3 Credits **Fall**
Analytical Instrumental Laboratory (1+6) n
An analytical chemistry laboratory emphasizing quantitative instrumental measurements with atomic and molecular absorption spectrometry, gas and liquid chromatography and potentiometry. $15.00. (Prerequisite: CHEM 212, Corequisite CHEM 331, 412.)

CHEM 434 3 Credits **Fall**
Physical Instrumental Laboratory (1+6) n
A physical chemistry laboratory emphasizing quantitative instrumental measurements: calorimetry, conductance, polarimetry; IR, NMR, x-ray, and Raman spectroscopy. Laboratory fee: $15.00. (Prerequisite: CHEM 433.)

CHEM 445 4 Credits **Spring**
Molecular and Evolutionary Genetics (3+3)
(Same as BIOL 445)
The study of structure, funcion and evolution of hereditary molecules (nucleic acids) and their proteins. (Prerequisite: BIOL 362.)

CHEM 451 3 Credits **Fall**
General Biochemistry (3+0)
Chemistry of biomolecules with emphasis on the bioenergetics and control of metabolic pathways via regulation of specific enzymes. (Prerequisites: CHEM 322; CHEM 331 and 322 recommended or permission of the instructor.)

CHEM 452 3 Credits **Spring**
Biochemistry Laboratory (1+6)
An introduction to the experimental manipulation and observation of enzymes, proteins, and nucleic acids, using chromatographic, spectroscopic, electrophoretic, and other techniques. Laboratory fee: $15.00 (Prerequisite: CHEM 451.)

CHEM 602 3 Credits **As Demand Warrants**
Advanced Inorganic Chemistry (3+0)

CHEM 612 3 Credits **Alternate Fall**
Advanced Analytical Chemistry (3+0)

CHEM 621 3 Credits **As Demand Warrants**
Physical Organic Chemistry (3+0)

CHEM 622 3 Credits **As Demand Warrants**
Advanced Organic Chemistry II (3+0)

CHEM 631 3 Credits **Alternate Spring**
Advanced Physical Chemistry (3+0)

CHEM 632 3 Credits **As Demand Warrants**
Molecular Spectroscopy (3+0)

CHEM 652 3 Credits **Alternate Spring**
Advanced Biochemistry (3+0)

CHEM 660 3 Credits **Spring**
Chemical Oceanography (3+0)
(Same as MSL 660)

Chinese

CHNS 101 3 Credits **Fall**
CHNS 102 3 Credits **Spring**
Elementary Chinese I and II (3+0) h
Introduction to the language and culture; development of competence and performance in the language through understanding recognition and use of linguistic structures, increasing emphasis on listening comprehension and speaking, exploration of the cultural dimension, implicitly through language and explicitly through texts and audio-visual materials. (Prerequisite: For CHNS 102, CHNS 101.)

CHNS 201 3 Credits **Fall**
CHNS 202 3 Credits **Spring**
Intermediate Chinese I and II (3+0) h
Continuation of Chinese 102. Increasing emphasis on reading ability and culture material. Conducted in Chinese. (Prerequisite: CHNS 102 or equivalent.)

Civil Engineering

CE 112 3 Credits **Spring**
Elementary Surveying (2+3)
Basic plane surveying; use of transit, level, theodolite, and and total station. Traverses, public land system, circular curves, cross-sectioning and earthwork. (Prerequisites: MATH 108.)

CE 326 4 Credits **Fall and Spring**
Introduction to Geotechnical Engineering (3+3)
Introduction to the fundamentals of geotechnical engineering including both soil mechanics and foundation engineering. Identification and classification of soil, physical and mechanical properties of soil, subsurface exploration and laboratory testing techniques, seepage, compaction, bearing capacity, slope stability, deep and shallow foundation design, retaining structure design, frozen ground consideration. (Prerequisites: ES 331, ES 341, CE 334 or permission of the instructor.)

CE 334 3 Credits **Fall**
Properties of Materials (2+3)
Introduction to the properties of engineering materials. Bonding, crystal, and amorphous structures. Relationships between microstructure and engineering properties. Modification of properties and environmental serviceability. Concrete and asphalt mixes. Laboratory fee: $10.00. (Corequisite: ES 331.)

CE 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. Materials fee: $10.00. (Prerequisite: ES 341.)

CE 400 0 Credits **Fall and Spring**
EIT Exam
Complete the EIT application and take the State of Alaska Engineering-in-Training Exam in the same semester of course registration. (Prereqisites: Senior Standing, Civil Engineering.)

CE 402 3 Credits **Fall**
Introduction to Transportation Engineering (3+0)
Introduction to fundamentals of transportation engineering. Transportation systems, planning, design parameters, demand and mode specific consideration. Laboratory fee: $10.00. (Prerequisites: CE junior standing or permission of instructor.)

CE 403 3 Credits **Fall**
Traffic Engineering (2+3)
Analysis and design of highways, streets and intersections for traffic consideration. (Prerequisite: CE 402)

CE 404 3 Credits **Spring**
Highway Engineering (2+3)
Engineering considerations for highway design including vertical and horizontal alignment, cross sections, drainage, pavements, earthworks, signs and markings, intersection and interchange. (Prerequisite: CE 402.)

CE 412 3 Credits **Alternate Spring**
Elements of Photogrammetry (2+3)
Elementary study of aerial and terrestrial photography as applied to surveying and mapping. Flight planning and ground control. Analytical analysis of photography by computer. Kelsh Plotter and other related equipment will be used. (Prerequisite: permission of the instructor. Next offered: 1989-90.)

CE 415 3 Credits **Fall**
Advanced Surveying (2+3)
Azimuth by astronomic methods. Route surveying, including horizontal and vertical curves, spirals, cross-sectioning, and earthwork. Reduction of electronic distance measurements. Alaska State Plane Coordinate System, both old (NAD27) and new (NAD83). (Prerequisite: CE 112)

CE 416 1 Credit **Spring**
Boundary Surveying (1+0)
Surveying problems related to land subdivision with emphasis on the legal aspects. Both metes and bounds descriptions and platted subdivisions are considered. (Prerequisite: CE 112 or permission of the instructor.)

CE 422 3 Credits **Spring**
Foundation Engineering (3+0)
Principles of foundation design, ultimate bearing capacity of soils and effects of settlements on structure, design of footings and rafts, design of pile and pier foundations, retaining walls and anchored bulkheads, foundations on frozen soils, and construction problems in foundation engineering. (Prerequisite, CE 326, ES 301.)

CE 425 3 Credits Fall
Advanced Soil Mechanics (2+3)
Soil formation, identification and classification, physical and mechanical properties of soil, seepage, drainage and frost action, subsoil investigation, bearing capacity of soils, and lateral earth pressures and stability of slopes. Laboratory fee: $10.00. (Prerequisite: CE 326, ES 301.)

CE 431 3 Credits Spring
Structural Engineering I (3+0)
Analysis of statically determinate and indeterminate structures to include: beams, trusses and frames. Internal force resultants, shear and moment diagrams, deflections, internal stresses. Influence lines and criteria for moving loads. Indeterminate analysis to include methods of consistent deflections, slope deflection and moment distribution. Introduction to matrix methods. (Prerequisites: CE 334, ES 331.)

CE 432 3 Credits Fall
Structural Engineering II (3+0)
The concepts of analysis/design will be examined for structural systems using advanced methods of structural analysis and computer techniques. The effects of material behavior, and modes of failure (building, bending, shear, connections) on design decisions will be examined. (Prerequisite: CE 431.)

CE 433 3 Credits Fall
Reinforced Concrete Design (2+3)
Analysis and design of reinforced concrete components. Design philosophies and current practice. Short and long columns, beam-columns, flexural members, to include: rectangular and T-beams, one and two-way slabs. Footings. Crack control, anchorage, development lengths and deflections. Introduction to complete structural systems. Current ACI specifications used. (Prerequisite: CE 431.)

CE 434 3 Credits Spring
Timber Design (2+3)
Essentials of structural design in timber. Design of basic components of solid and laminated timber, connections, arches, pole framing, diaphragms, stressed-skin construction, and timber shells. (Prerequisite: ES 331 and CE 431.)

CE 436 3 Credits Spring
Structural Steel Design (2+3)
Analysis and design of structural steel components. Design philosophies and current practice. Columns, tension members, laterally supported and unsupported beams and beam-columns. Local and global instabilities. Welded and bolted connections. Introduction to complete structural systems. Current AISC specifications used. Prerequisite: CE 431.)

CE 438 3 Credits Spring
Design of Engineered Systems (3+0)
Introduction to system design methods for large scale engineering systems. The application linear and dynamic programming and statistical methods to design decisions. Emphasis on problems in civil engineering. (Prerequisite: Senior standing in an engineering program.)

CE 441 4 Credits Fall
Environmental Engineering (3+3)
Introduction to fundamentals of environmental engineering including theory and application of water and wastewater engineering practice. Conservation, quality, treatment, and distribution of water supply. Wastewater characteristics, collection, treatment, and disposal. Introductory information on solid waste management and air pollution control. Laboratory fee: $10.00. (Prerequisite: ES 341 or permission of instructor.)

CE 442 3 Credits Spring
Environmental Engineering II (3+0)
Advanced topics in environmental engineering. Each of the following subjects will be allocated about an equal portion of time for topic coverage. Environmental law and health, air pollution, solid waste management, toxic and hazardous wastes, animal waste management, noise pollution, water quality modeling, wastewater collection systems, chemical/physical processes, theory of sedimentation, disinfection, biological processes, onsite treatment, sludge management, advanced waste treatment and other. (Prerequisites: CE 441 and junior CE standing.)

CE 445 3 Credits Fall
Engineering Hydrology (2+3)
Engineering hydrology, design and analysis; extended coverage of hydrologic concepts from CE 344. Precipitation, evaporation analysis; groundwater hydraulics; runoff analysis and prediction; statistical hydrology; application of simulation models. (Prerequisite: CE 344.)

CE 446 3 Credits Spring
Hydraulic Engineering (2+3)
Hydraulic design and analysis. Review of principles of fluid mechanics pipe network modeling, hydraulic systems (pumps and turbines), steady and unsteady flow in open channels, hydraulic structures, similitude. (Prerequisite: CE 344.)

CE 470 1 Credit Fall and Spring
Civil Engineering Internship (0+3)
Designed to give students the opportunity to investigate the practical workings of engineering organizations. Assignments individually arranged with cooperating organizations and agencies. (Prerequisites: Senior standing. Permission of Department Coordinator.)

CE 603 3 Credits Fall and Spring
Arctic Engineering (3+0)

CE 605 3 Credits Alternate Spring
Pavement Design (3+0)

CE 617 3 Credits Alternate Fall
Control Surveys (3+0)

CE 620 3 Credits Alternate Spring
Civil Engineering Construction (3+0)

CE 622 3 Credits Alternate Fall
Foundations and Retaining Structures (3+0)

CE 625 3 Credits Alternate Fall
Soil Stabilization (3+0)

CE 626 3 Credits Alternate Fall
Applications in Geotechnical Engineering (3+0)

CE 627 3 Credits Spring
Earthquake Engineering I (3+0)

CE 631 3 Credits Fall
Advanced Structural Analysis (3+0)

CE 632 3 Credits Alternate Fall
Advanced Structural Design (3+0)

CE 637 3 Credits Fall
Earthquake Engineering II (3+0)

CE 661 3 Credits As Demand Warrants
Advanced Water Resources Engineering (3+0)

CE 662 3 Credits Alternate Spring
Open Channel and River Engineering (3+0)

CE 663 3 Credits Alternate Years
Groundwater Dynamics (3+0)

CE 676 3 Credits As Demand Warrants
Coastal Engineering (3+0)

CE 681 3 Credits Alternate Spring
Frozen Ground Engineering (3+0)

CE 682 3 Credits Alternate Spring
Ice Engineering (3+0)

CE 683 3 Credits Alternate Years
Arctic Hydrology and Hydraulic Engineering (3+0)

CE 684 3 Credits Alternate Years
Arctic Utility Distribution (3+0)

CE 685 3 Credits Alternate Spring
Topics in Frozen Ground Engineering (3+0)

College Student Personnel Administration

CSP 651 3 Credits As Demand Warrants
Current Issues in Student Personnel Administration (3+0)

CSP 655 3 Credits As Demand Warrants
Practicum in Student Personnel Administration (1+6)

CSP 665 3 Credits As Demand Warrants
Practicum in Counseling: Higher Education/Agency (0+9)
(Same as COUN 665.)

Community Health Aide

CHP 082 1 Credit As Demand Warrants
Community Health Aide Pre-session I (1+0)
Assists the newly employed community health aide to function in the village clinic until he/she enters Session I. (Prerequisite: Employment by health corporation as community health aide or permission of instructor.)

CHP 110 8 Credits As Demand Warrants
Community Health Aide, Session I (8+0)
Introduction for the community health practitioner. Topics covered include normal anatomy and physiology; history taking; physical examination; introduction to clinical therapy; family health; communicable diseases; pharmacology; clinic management and health administration. Prepares student to work independently in a village clinic providing basic primary health care under the medical supervision of a physician at the regional hospital.

CHP 111 8 Credits As Demand Warrants
Community Health Aide, Session II (8+0)
Focus of this session is on the childbearing cycle, infant and child. Other subject matter centers on health promotion and maintenance, including topics of nutrition, mental health and health education. Upon completion student is prepared to conduct basic prenatal and well-child examinations, recognize and manage most common minor problems seen in these areas and make appropriate referrals as necessary. (Prerequisite: CHP 110.)

CHP 112 8 Credits As Demand Warrants
Community Health Aide, Session III
Session focuses on clinical assessment and therapy. Attention is given to student's ability to differentiate between normal and abnormal, determine the relative seriousness of the patient's condition and to make appropriate judgments regarding the nature, locale and immediacy of treatment. Areas such as emergency care, pharmacology, environmental health, communicable disease and family health are reviewed and studied in greater depth. (Prerequisite: CHP 111.)

CHP 202 3 Credits As Demand Warrants
Emergency Care for Community Health Practitioners (2+0)
Will learn to evaluate and respond to a wide variety of emergency situations that may arise in the village setting. Included among skills to be taught are emergency assessment and treatment, administration of intravenous fluids, application of splints, bandages and transportation of the injured. (Prerequisite: CHP Certification.)

CHP 203 2 Credits As Demand Warrants
Clinical Update for Community Health Practitioners (2+0)
Review, update and reinforce the knowledge and skills that were taught in Basic CHP training.

CHP 206 2 Credits As Demand Warrants
Life Coping Skills (2+0)
Designed to teach listening skills, drug therapy and family dynamics to those most likely to be involved with both crisis intervention and long term care in the area of mental health. (Prerequisite: CHP Certification.)

CHP 207 2 Credits As Demand Warrants
Maternal and Infant Health (2+0)
Review of the anatomy of the reproductive system, family planning, pregnancy, fetal development, prenatal care, emergency delivery, maternal post-partum and infant care. (Prerequisite: CHP Certification.)

CHP 208 2 Credits As Demand Warrants
Communicable Diseases (2+0)
Expands concepts of CHP 112 in relation to diagnosis, management and prevention of sexually transmitted diseases. Skills to conduct a village program for venereal disease control are taught including procedures involved for early detection of uterine cancer (PAP), tuberculosis and immunization procedures. (Prerequisite: CHP Certification.)

CHP 211 1 Credit As Demand Warrants
Health Education (1+0)
Methods and philosophy of health education, use and sources of audio-visual materials, presentation planning and participation in a school health program. Variety of teaching methods including situational role playing and practice sessions are used in the application of newly acquired health education knowledge and skills. (Prerequisite: CHP Certification.)

Computer Applications

CAPS 100 1 Credit As Demand Warrants
Introduction to Personal Computers (1+0)
Introductory course on the personal computer. Course is designed for the first time user and will give an overview of the tree most popular uses of the personal computer: word processing, data base management and electronic spreadsheets. Students completing this course will have a basic understanding of how the computer works and how they might put it to work for them. Materials fee: $5.00.

CAPS 102 3 Credits As Demand Warrants
Programming in BASIC (3+0)
Recommended as a first programming language for non-majors. Training and practice in writing programs in BASIC language for business data processing applications using microcomputers. Emphasis on problem-solving; analysis, flowcharting, testing and debugging and documentation. (Prerequisite: MATH 070 or 105 or equivalent.)

CAPS 103 1-3Credits As Demand Warrants
Computer Survey (1+0 to 3+0)
Course provides student an introduction to the world of computers with an emphasis on microcomputers. Introduces the computer and provides computer terminology. Will learn not only 'about' computers but also how to 'use' computers as a tool to make work easier and possible to extend the reach of their minds.

CAPS 104 3 Credits As Demand Warrants
Introduction to Computer Programming (3+0)
Through readings, homework computer assignments and computer project assignments the student will learn the fundamental structure of the computer language PASCAL and be able to write elementary computer programs on the IBM-PC (or compatible) computer. Will also be able to understand what a computer is and how it functions, compiles, processes and outputs information. Computer networking will be an integral part of the course. (Prerequisite: Ninth grade reading and comprehension level.)

CAPS 105 3 Credits As Demand Warrants
Programming in Fortran (3+0)
Training and practice in writing programs in FORTAN. Emphasis on problem-solving through analysis, flowcharting, testing and debugging and documentation. (Prerequisite: Math 070 or 105 or equivalent.)

CAPS 106 3 Credits As Demand Warrants
BASIC Programming (3+0)
Training and practice in writing programs in the BASIC language for business data processing applications using microcomputers. Emphasis on problem solving with a computer. (Equivalent to CAPS 102.)

CAPS 107 3 Credits As Demand Warrants
Programming in PASCAL (3+0)
Through textbook readings, lecture/discussion sessions and nine programming assignments the student will learn the fundamental structure of the computer language PASCAL (up to data types of single dimension arrays) and be able to write elementary computer programs on the University VAXNMS in PASCAL. (Prerequisite: One computer programming course or equivalent.)

CAPS 110 3 Credits As Demand Warrants
Microcomputer as Learning Tool (3+0)
Concentration on word processing and other software to facilitate education. Telecommunications will be an important part of course. Materials fee: $5.00-$15.00. (Prerequisite: Typing skill required.)

CAPS 111 2 Credits As Demand Warrants
Computer Software for Beginners (2+0)
An absolute beginners class into the world of computers - without writing programs. An overview of computer hardware and software will be presented along with demonstrations and hands-on experience with telecommunications, word-processing, spreadsheets, data base management and tutorial software. IBM-PC, APPLE, and mainframe computers will be used. This is not a lab class; some out-of-class work on computers is expected.

CAPS 120 2 Credits As Demand Warrants
Introduction to LOGO (2+0)
An introduction to programming in LOGO. Topics include; recursion, interactive graphics, primitives, procedures, managing work space, filing, debugging and editing commands.

CAPS 122 1-2 Credits As Demand Warrants
Computer Software Application (1+0 to 2+0)
Provides student with an opportunity to learn to effectively use either spreadsheet or data base management software on a microcoputer. Some of the programs available for use include VISICALC, DB MASTER, APPLE-WORKS, LOTUS 1-2-3, dBASE III.

CAPS 124 1 Credit As Demand Warrants
Apple Workshop (1+0)
Fundamentals of Apple computer operations, popular programs and DOS.

CAPS 125 3 Credits As Demand Warrants
Appleworks (3+0)
A beginning course covering the many issues of the program 'APPLEWORKS' taught on the Apple IIe. APPLEWORKS has word processing, electronic spreadsheet and data base capabilities. Materials fee: $5.00-$15.00.

CAPS 130 3 Credits As Demand Warrants
Introduction to BASIC Programming (3+0)
A beginning course in BASIC. Course will cover the arithmetic, logic, graphics, and file statements of Applesoft BASIC. Materials fee: $5.00.

CAPS 135 1 Credit As Demand Warrants
Introduction to LOTUS 1-2-3 (1+0)
An overview on electronic spreadsheet concepts using 'LOTUS 1-2-3' taught on the COMPAQ. Materials fee: $5.00.

CAPS 140 3 Credits As Demand Warrants
Introduction to PASCAL (3+0)
An introduction to programming in PASCAL using Apple microcomputers with UCSD PASCAL.

CAPS 145 1 Credit As Demand Warrants
Introduction to MULTIMATE (1+0)
Course to teach business managers, program administrators, secretaries, office workers and others who require a high level of word processing productivity the preparation and revision of standard or customized business correspondence and reports using a contemporary, versatile software program and microcomputer. Students should bring two (2) double-density 5-¼ diskettes to class. Materials fee: $5.00.

CAPS 150 1 Credit As Demand Warrants
Computer Business Applications (1+0)
Class will investigate several possible ways to use microcomputers in a business. Software presented includes word processing, spreadsheets, data bases, graphics, project management and telecommunications. Each application will be introduced in class and possible uses in a business environment will be suggested. No previous experience necessary. Materials fee: $5.00.

CAPS 181 2 Credits As Demand Warrants
Introduction to Microcomputers at Home (2+0)
Introduction to home computer usage by typical consumers. Overview of home computers, uses, operations and programs. Does not satisfy certificate or degree requirements.

CAPS 182 2 Credits As Demand Warrants
Introduction to Microcomputers in Small Businesses (2+0)
Introduction to microcomputers used in samll business or professional practice by small business owners or employees. Overview of computers, uses and means of evaluation when purchasing equipment. Does not satisfy certificate of degree requirements.

CAPS 200 2 Credits (2+0)
Programming in Assembly Language (2+0)
A course in programming the 6502 (Apple) computer in ASSEMBLY and MACHINE language. Course will include the following topics: assembly coding, registers, stacks, indirect and indexed addressing, logic and arithmetic operations, binary and hexadecimal code.

CAPS 220 2 Credits As Demand Warrants
Microcomputer Graphics (2+0)
Practical techniques for generating computer graphics on the Apple. (Prerequisite: BASIC programming experience and Math 070 or equivalent Algebra II.)

CAPS 221 3 Credits As Demand Warrants
Microcomputer Accounting (3+0)
Introduction to accounting on the Apple IIe plus microcomputer. (Prerequisite: An introductory course in accounting or one year practical experience in accounting or permission of instructor. Also see ABUS 221.)

Computer Science

CS 101 3 Credits Fall and Spring
Computers and Society (3+0)
A course in computer literacy for everyone. An overview of computing machines and the automatic processing of data. The interaction between social institutions and automated decision making. Some programming, but as a means of understanding the process rather than skill development. (Prerequisite: Two years of high school mathematics, including at least one year of algebra.)

CS 201 3 Credits Fall and Spring
Computer Programming I (2+3)

CS 202 3 Credits Fall and Spring
Computer Programming II (3+0)
A year sequence providing an introduction to problem solving, algorithm development, structured programming, top-down design, good programming style, and concurrent programming with extensive experience in a structured language (e.g. PASCAL, ADA, MODULA). (Prerequisites: For CS 201: previous introduction to programming and mathematics placement at the 200-level. For CS 202: CS 201.)

CS 271 3 Credits Spring
Scientific Programming in FORTRAN (3+0)
Syntax and principles of the FORTRAN programming language. Applications to problems in science and engineering including the solution of linear and non-linear equations, interpolation, numerical integration, monte-carlo techniques and the use of mathematical subroutine libraries. (Prerequisites: One semester of calculus and previous programming experience or consent of instructor.)

CS 281 3 Credits Fall
Computer Graphics (3+0)
Study of applications, design of graphics software, survey of input and output devices, two and three dimensional geometric transformations, curves, and surfaces. (Prerequisites: CS 201, MATH 200, and MATH 210.)

CS 301 3 Credits Fall
Assembly Language Programming (3+0)
Organization of computer registers, I/O, and control. Digital representation of data. Symbolic coding, instructions, addressing modes, program segmentation, linkage, macros, and subroutines. (Prerequisites: CS 201)

CS 302 3 Credits Alternate Spring
Systems Programming (3+)
Advanced assembly language programming including privileged instructions and system services. Applications to asynchronous I/W, process control and communication, device drivers and file management. (Prerequisite: CS 301. Next offered: 1989-90.)

CS 311 3 Credits Fall
Data Structures and Algorithms (3+0)
Data structures and the algorithms for their manipulation. Arrays, tables stacks, queues, trees, linked lists, sorting, searching, and hashing. (Prerequisites: CS 202)

CS 321 3 Credits Spring
Operating Systems (3+0)
The functions of files and operating systems, review of required architectural features. The PROCESS concept. Storage management, access methods and control, interrupt processing, scheduling algorithms, file organization and management, and resource accounting. (Prerequisite: CS 301)

CS 331 3 Credits Spring
Programming Languages (3+0)
A study of the syntax and semantics of widely differing programming languages. Syntax specification, block structure, binding, data structures, operators, and control structures. Comparison of several languages such as ALGOL, LISP, SNOBOL, and APL. Programming assignments in each language. (Prerequisite: CS 311)

CS 381 3 Credits Alternate Spring
Advanced Computer Graphics (3+0)
Graphics hardware, display programming, transformations, hidden line and surface elimination, approximation techniques for curve and surface representation, and project. (Prerequisites: CS 281 and MATH 314. Next offered: 1990-91.)

CS 401 3 Credits Spring
Software Engineering (3+0)
Software design as an engineering discipline. Project planning, proposal writing, and management. Program design, verification, and documentation. Additional topics from security, legal aspects of software, and validation. Students will work on group projects and produce appropriate reports and a project history. (Prerequisites: CS 311, CS 321 & senior standing)

CS 411 3 Credits Spring
Analysis of Algorithms (3+0)
Analysis of classic algorithms, their implementation, and efficiency. Topics from combinatorics (sets, graphs, bit vectors), algebra (integer arithmetic, primes, polynomial arithmetic, GCD, Diophantine equations), systems (parsing searching, sorting), and theory (recursion, Turing machines). (Prerequisites: MATH 307, CS 311.)

CS 425 3 Credits **Alternate Fall**
Data Base Systems (3+0)
Data independence, relationships, and organization. Hierarchical, network, and relational data models; canonical schema. Data description languages, query facilities, relational calculus. File organization and security, index organization, data integrity and reliability. (Prerequisites: CS 311, CS 321. Next offered: 1990-91.)

CS 442 3 Credits **Alternate Fall**
Computer Communication and Networks (3+0)
Review of communication terminology, baud rates, band width, noise, and error detection. Distributed processing and local and global networks. Interfacing problems, security, and reliability. Networks, ring vs. spoke linkage, packet switching, and path optimization. Examples: The ARPA net, Airline reservation systems. (Prerequisite: CS 321. Next offered: 1989-90.)

CS 448 3 Credits **Alternate Fall**
System Architecture (3+0)
Hardware, operating systems and their interaction. I/O, interrupts, memory management, concurrent processing, deadlock, modularity, system balancing, scheduling, protection, introduction to communications, and networks. (Prerequisites: EE 342, CS 321. Next offered: 1990-91.)

CS 451 3 Credits **Alternate Fall**
Automata and Formal Languages (3+0)
Finite automata, regular languages, finite transducers, context free language, push down automata, parsing algorithms, deterministic context free languages, recursive and recursively enumerable languages, decision procedures, and undecidability. (Prerequisites: MATH 307, CS 201. Next offered: 1989-90.)

CS 605 3 Credits **As Demand Warrants**
Artificial Intelligence (3+0)

CS 611 3 Credits **Fall**
Complexity of Algorithms (3+0)

CS 621 3 Credits **As Demand Warrants**
Advanced Systems Programming (3+0)

CS 622 3 Credits **As Demand Warrants**
Performance Evaluation (3+0)

CS 631 3 Credits **Fall**
Programming Language Implementation (3+0)

CS 641 3 Credits **Spring**
Advanced Systems Architecture (3+0)

CS 642 3 Credits **As Demand Warrants**
Distributed Processing (3+0)

CS 651 3 Credits **Spring**
The Theory of Computation (3+0)

CS 661 3 Credits **As Demand Warrants**
Optimization (3+0)
(Same as MATH 661)

CS 662 3 Credits **As Demand Warrants**
Mathematical Software (3+0)

CS 681 3 Credits **As Demand Warrants**
Topics in Computer Graphics (3+0)

CS 690 3 Credits **Fall**

CS 691 3 Credits **Spring**
Graduate Seminar and Project (3+0)

Counseling

COUN 615 3 Credits **Spring**
Foundations of Guidance and Counseling (3+0)

COUN 623 4 Credits **Fall**
Principles and Techniques of Individual Counseling (3+3)
(Same as PSY 660)

COUN 624 3 Credits **Spring**
Group Counseling (3+0)
(Same as PSY 674)

COUN 628 3 Credits **Fall and Spring**
Life Span Development (3+0)

COUN 634 3 Credits **Fall**
Counseling Practicum I (2+7)

COUN 636 3 Credits **Fall and Spring**
Counseling Practicum II (0+9)

COUN 645 3 Credits **Alternate Spring**
Behavioral Counsultation (3+0)

COUN 660 3 Credits **Fall**
Cross-Cultural Counseling (3+0)

COUN 665 3 Credits **Fall and Spring**
Practicum in Counseling: Higher Education/Agency (0+9)
(Same as CSP 665)

Cross Cultural Communication

CCC 104 3 Credits **Fall and Spring**
University Communications (3+0)
(Same as DEVS 104)
Designed to introduce communication skills that are characteristic of university contexts (e.g., taking notes from lectures) and to address cultural differences between rural students and the university community. Links with selected lecture course. (Prerequisite: Referral from Rural Student Services.)

CCC 105 3 Credits **Fall and Spring**
Intensive Reading Development (3+0)
(Same as DEVS 105)
Develops and refines vocabulary, comprehension, and critical reading at the college level. Instruction focuses on developing readers' ability to use a wide range of comprehension strategies to enhance reading effectiveness. (Prerequisite: Referral from Rural Student Services.)

CCC 106 3 Credits **Fall and Spring**
Intensive Writing Development (3+0)
Emphasizes differences between speaking and writing, focusing on rhetorical patterns and style appropriate for formal writing in a university context. Prepares students for English 111. (Prerequisite: Referral from Rural Student Services.)

CCC 107 3 Credits **Spring**
Intensive Writing Development II (3+0)
Designed to further prepare students for English 111 by focusing extensively on essay writing. Includes the writing and production of *Theata* magazine. (Prerequisite: Referral from Rural Student Services.)

Culinary Arts

CAH 105 3 Credits **As Demand Warrants**
Principles of Food Service I (3+0)
Introduction to food service and the principle variations which students may encounter within the industry; professional standards, kitchen safety, first aid, storeroom operation, kitchen equipment and basic culinary terminology.

CAH 140 6 Credits **As Demand Warrants**
Principles of Cooking (6+0)
Course gives the student an opportunity to learn basic food service skills in a commercial kitchen environment. USe of standardized recipes and procedures will be stressed. End product will be critiqued on a daily basis. Student assignments will rotate between a stock and soup station, vegetable station, pantry, and service line and grill. Emphsis will be on sanitary food handling practices and the development of professional work habits. Uniform cleaning fee: $105.00.

CAH 141 6 Credits **As Demand Warrants**
Food Production I (6+0)
Continuation of CAH 140 with emphasis on preparation and use of small sauces, sautéing, roasting, braising, stewing and broiling. Salad bar preparation and grill service will also be covered. Uniform cleaning fee: $105.00.

CAH 145 6 Credits **As Demand Warrants**
Principles of Baking (6+0)
Students will be taught basic commercial baking skills and procedures. Class will include lectures, demonstrations and hands-on activities. The use of standardized recipes and procedures will be stressed. End product will be critiqued on a daily basis. Emphasis will be on sanitary food handling, practices and the development of professional work habits. Uniform cleaning fee: $105.00.

CAH 146 6 Credits **As Demand Warrants**
Bakery Production I (6+0)
Continuation of CAH 145 with emphasis on Danish and French pastries, combination breads, tortes and fancy dessert items. Uniform cleaning fee: $105.00.

CAH 150 1 Credit As Demand Warrants
Sanitation (1+0)
Course will provide an understanding of sanitation principles essential to commercial kitchen personnel. Successful completion of the course will allow the student to receive certification by the National Institute for the Food Service Industry.

CAH 152 2 Credits As Demand Warrants
Supervisory Development (2+0)
Introduction to the problems and challenges that food service supervisors deal with every day. Course will emphasize development of personnel management methods.

CAH 154 2 Credits As Demand Warrants
Dining Room Service (2+0)
Introduction to American style table service. Students will participate in dinning room service, management, controls and methods.

CAH 170 2 Credits As Demand Warrants
Gourmet Cooking (2+0)
Preparation and service of gourmet beef, poultry and seafood entrees for the home cook. Recipes represent new ideas in home entertainment, and menus change every semester. Materials fee: $75.00.

CAH 199 1-12 Credits As Demand Warrants
Culinary Arts Workstudy Externship
Students work in a variety of food service operations, learning current cooking methods and techniques. Students are evaluated by the externship coordinator and the employer. Enrollment by special permission only.

CAH 242 4 Credits As Demand Warrants
Food Production II (4+0)
Continuation of CAH 141 with emphasis on ala carte and production cooking. Students will prepare foods for the Advance Table Service class. Foods will represent current trends in the industry with kitchen organization and professional methods stressed. Uniform cleaning fee: $105.00.

CAH 243 4 Credits As Demand Warrants
Food Production III (4+0)
Continuation of CAH 242 with emphasis on international and new trend American Cooking. The role of the Gardé Manger in the modern kitchen will also be explored. Uniform cleaning fee: $105.00. (Prerequisite: CAH 242 or permission of instructor.)

CAH 247 4 Credits As Demand Warrants
Bakery Production II (4+0)
Continuation of CAH 146 with emphasis on specialty breads, desserts, cakes, tortes and French pastries. Ability to plan and organize production, schedule and supervise other students will be emphasized. Uniform cleaning fee: $105.00. (Prerequisite: CAH 146 or permission of instructor.)

CAH 248 4 Credits As Demand Warrants
Bakery Production III (4+0)
Continuation of CAH 247 with emphasis on pastry buffet. Students will produce artistic centerpieces, decorated tortes sand cakes, assorted French pastries, assorted petits fours, and assorted candies. Uniform cleaning fee: $105.00. (Prerequisite: CAH 146 and 247 or permission of instructor.)

CAH 250 2 Credits As Demand Warrants
Gardé Manger (2+0)
A course designed to give the student a hands on experience in buffet. Presentation of hot and cold foods. Students will produce pates, mousses, forcements, aspics, and other items essential to culinary expertise. Materials fee: $10.00.

CAH 253 2 Credits As Demand Warrants
Storeroom Purchasing and Receiving (2+0)
Introduction to formal and informal methods of purchasing, receiving and storing of food and nonfood items in food service operations. Specifications, par inventory systems and controls will be emphasized. Materials fee: $10.00.

CAH 255 2 Credits As Demand Warrants
Food Service Management (2+0)
Study of the management teams' responsibility in the food service operation. Students will assume the role of kitchen manager, dining room manager and general manager.

CAH 256 2 Credits As Demand Warrants
Food Service Accounting (2+0)
Principles and practices concerned with determination of food cost, labor cost, beverage cost and the basic accounting practices necessary to operate a successful food service operation.

CAH 257 1 Credit As Demand Warrants
Oenology-Hospitality Industry I (1+0)
An introduction to the study and evaluation of the wines of France, Germany, Italy and the California wine producing areas. Focus will be on 'point of sale' approach for first level serving staff. Special attention to selecting for individual meals. Materials fee: $45.00.

CAH 258 1 Credit As Demand Warrants
Oenology-Hospitality Industry II (1+0)
A continuation of CAH 257 with in-depth evaluation and study of the major wine producing areas of the Pacific Northwest, California, France, Germany and Italy. Focus will be on preparing the new sommelier. Special attention to selections for building cellar and developing breadth in the restaurant. Materials fee: $37.50. (Prerequisite: CAH 257 or permission of instructor.)

Dance

DANC 108 1 Credit As Demand Warrants
Beginning Freestyle Jazz (1+0)
Jazz dance for the beginning student.

Danish

DNSH 101 5 Credits Fall
DNSH 102 5 Credits Spring
Elementary Danish I & II (5+0) h
Introduction to the language and culture; development of competence and performance in the language through understanding, recognition and use of linguistic structures, increasing emphasis on listening comprehension and speaking, exploration of the cultural dimension, implicitly through language, and explicitly through texts and audio-visual materials. (Prerequisites: For DNSH 102, DNSH 101.)

DNSH 201 3 Credits Fall
DNSH 202 3 Credits Spring
Intermediate Danish I & II (3+0) h
Continuation of Danish 102. Increasing emphasis on reading ability and culture material. Conducted in Danish. (Prerequisites: DNSH 102 or equivalent.)

DNSH 301 3 Credits Fall
DNSH 302 3 Credits Spring
Advanced Danish I & II (3+0) h
Reading of essays in more difficult texts - fiction/non-fiction. Study of selected Danish authors and literary genres. Discussions of cultural materials other than texts: films, slides, pictures. Translations, stylistic exercises and special grammar problems. Conducted in Danish. (Prerequisites: DNSH 202 or permission of instructor.)

Developmental Studies

DEVS 052 3 Credits As Demand Warrants
Reading Enhancement (3+0)
Intensive instruction in reading designed to increase vocabulary and comprehension skills necessary for successful reading in the content areas of college courses.

DEVS 058 1-3 Credits As Demand Warrants
Reading Lab (0+3-9)
Individualized instruction in improving reading comprehension and efficiency. May be repeated.

DEVS 065 1 Credit As Demand Warrants
Spelling Improvement (1+0)
A diagnostic/prescriptive approach for improving spelling skills.

DEVS 066 1 Credit As Demand Warrants
Vocabulary Development (1+0)
This couse is designed to increase vocabulary substantially and to provide tools for further vocabulary growth.

DEVS 104 1-3 Credits Fall and Spring
University Communications (1-3+0)
(Same as CCC 104)
Introduces the unique methods of communication required at the college level. Links with selected lecture courses. May be repeated.

DEVS 105 3 Credits As Demand Warrants
College Reading (3*+0)
(Same as CCC 105)
Develops and refines vocabulary, comprehension and critical reading at the college level. Instruction focuses on developing readers' ability to use a wide range of comprehensive strategies to enhance reading effectiveness. Placement by examination.

DEVS 110 1 Credit Fall and Spring
Orientation to College (2+0)
(Same as PSY 110)
An overview of the university as an institution with strategies and resources available to ensure a successful transition to college life in general, and specifically, the University of Alaska Fairbanks. Topics include academic and developmental skill building strategies, such as study skills, time management, career planning, and stress management. An examination of Alaska's past, present and future from social, cultural, political, and economic perspectives, including Pacific Rim and international/global issues. Graded Pass/Fail.

DEVS 185 3 Credits As Demand Warrants
Straight Thinking (3+0)
A study of inductive, deductive and seductive thinking and skill building to recognize and use all three. Critical thinking skills to analyze newspaper, magazine and spoken arguments will be covered. Political speeches and other media presentation will be examined. Effective and convincing presentation of one's own ideas include formal and informal logic which will be practiced. Materials fee: $10.00.

ENGLISH

DEVE 060 3 Credits As Demand Warrants
Elementary Exposition (3+0)
Intensive work in the process of writing and revising to improve one's writing skills. Placement by examination.

DEVE 068 1-3 Credits Fall and Spring
English Skills Laboratory (0+3-9)
The open entry/open exit lab block is designed to provide students with individualized instruction where language skill building is needed. The lab is composed of three modules (spelling/vocabulary, writing, and grammar/usage). It is not necessary for a student to enroll in all three modules. These modules may be taken for elective credit only, may not be used to fulfill written communication or humanities degree requirements and may by repeated as necessary.

DEVE 070 3 Credits As Demand Warrants
Preparation for College English (3+0)
(Same as Engl. 070)
Instruction in writing to improve students' fluency and accuracy, so they will be able to communicate ideas and information clearly and will be prepared to take ENGL 111. Placement by examination or student desire to enroll.

MATHEMATICS

DEVM 050 3 Credits As Demand Warrants
Basic College Mathematics (3+0)
Operations with whole numbers, fractions, decimals, percents and ratios, signed numbers, evaluation of algebraic expressions and evaluation of simple formula. Metric measurement system and geometric figures will also be studied.

DEVM 060 3 Credits As Demand Warrants
Elementary Algebra (3+0)
First year high school algebra. Evaluating and simplifying algebraic expressions, solving first degree equations and inequalities, integral exponents, polynomials, factoring, rational expressions. (Prerequisite: DEVM 050 or placement.)

DEVM 065 1-3 Credits As Demand Warrants
Mathematics Lab (0+3-9)
This course is an individual tutorial lab. Course content is selected according to the needs of the individual student from the topics covered in DEVM 050 and DEVM 060. (Prerequisite: placement.)

DEVM 070 3 Credits As Demand Warrants
Intermediate Algebra (3+0)
Second year high school algebra. Operations with rational functions, radicals, rational exponents, complex numbers, quadratic equations and inequalities, Cartesian coordinate system and graphing, systems of equations, determinants and logarithms. (Prerequisite: DEVM 060 or placement.)

Diesel Technology

DSLT 150 7 Credits As Demand Warrants
Diesel Mechanics I (7+0)
Course covers theory and function of the diesel engine. Topics include introduction to various diesel engines, shop tools and instruments for engine disassembly, inspection, assembly, parts failure analysis and shop safety. Materials fee: $125.00.

DSLT 152 7 Credits As Demand Warrants
Diesel Mechanics II (7+0)
A continuation of DSLT 150. Topics include air intake systems, exhaust systems, lube systems, cooling systems, and fuel systems. Materials fee: $125.00. (Prerequisite: DSLT 150.)

Drafting Technology

DRT 100 1 Credit As Demand Warrants
Introduction to Drafting Concepts (1+0)
An overview of the principles of architectural, civil and industrial drafting.

DRT 101 4 Credits As Demand Warrants
Beginning Drafting I (4+0)
A beginning course designed to build skill and knowledge in technical lettering, line techniques, equipment, orthographics, dimensioning, pictorials, auxiliaries and sections. Materials fee: $50.00.

DRT 102 2 Credits As Demand Warrants
Beginning Drafting II (2+0)
An advanced course in drafting involving practice and skill development in geometric construction, sketching, orthographics and dimensioning, sections, auxiliaries and work on individual projects. Materials fee: $20.00.

DRT 115 3 Credits As Demand Warrants
Graphics I (3+0)
Study and application of methods, problems and solutions in graphic design.

DRT 121 3 Credits As Demand Warrants
Reading Construction Blueprints (2+0)
A course to teach the reading and interpretation of two and tree dimensional blueprints of residential, light commercial and heavy commercial structures using conventional symbols and representation.

DRT 123 3 Credits As Demand Warrants
Uniform Building Code (3+0)
This course will cover the minimum required construction standards as described in the display Uniform Buiding Code. The course teaches the proper use of local zoning ordinances and the Uniform Building Code as comprehensive building guides and explains their principle aspects as applied to various building types and trades. This course concentrates on zoning, the UBC and some fire codes. Mechanical and electrical codes are introduced only for student familiarity. Materials fee: $15.00. (Prerequisite: working knowledge of building systems is strongly recommended.)

DRT 125 2 Credits As Demand Warrants
Lettering I (2+0)
A course to introduce and practice varigraphic, Leroy, Kohi-Noor, Kad II, freehand and script lettering methods and to develop commercial lettering ability.

DRT 130 4 Credits As Demand Warrants
Perspective Drafting I (4+0)
The basics of perspective (1 pt., 2 pt., 3 pt.) and introduction to the KLOK Perspective Board.

DRT 132 4 Credits As Demand Warrants
Perspective Drafting II (4+0)
Additional experience in 1 and 2 pt. perspectives on the KLOK perspective board in both interior and exterior perspectives (Prerequisite: DRT 130.)

DRT 140 4 Credits As Demand Warrants
Architectural Drafting I (4+0)
The introduction and practice of architectural drafting principles including site plans, foundations, floor plans, elevations, architectural sections, framing plans, area plan, and graphic standards. Materials fee: $30.00.

DRT 141 2 Credits As Demand Warrants
Architectural Concepts (2+0)
An overview of architectural drafting concepts including basic site plans, foundations, floor plans, elevations, architectural sections, framing plans, area plans, and graphic standards. Materials fee: $15.00.

DRT 150 4 Credits As Demand Warrants
Civil Drafting I (4+0)
The introduction and practice of civil drafting principles including plotting traverse and surveys by bearing and distance, latitudes and departures, topographic drawings and maps, contours and elevations, profiles and highway curves, cross-section drawings and grading plans. Materials fee: $30.00.

DRT 151 2 Credits As Demand Warrants
Civil Concepts (2+0)
An overview of civil drafting concepts and survey drafting including the plotting of traverse and surveys by bearing and distance. Materials fee: $15.00.

DRT 160 2-3 Credits As Demand Warrants
Draft Co-Op Work Experience (2-3+0)
A course for the student who has mastered basic drafting techniques and terminology which provides a non-paid practical work experience in a professional drafting environment. Placement and work assignments will vary depending upon student experience.

DRT 250 4 Credits As Demand Warrants
Civil Drafting III-Advanced (4+0)
Techniques of highway design, boundaries, right of way layouts, curves and grades, bridges, cut and fill detail drawings, gas and water services, sewers, culverts, signs and guard rails.

Early Childhood Development (SCCE)

(Also see "Early Childhood Education" (ECDD) for non-Fairbanks courses.)

ECHD 100 3 Credits As Demand Warrants
Introduction to Early Childhood (3+0)
An introductory course in the care and education of young children. The needs and skills of young children will be determined. The skills needed by child care workers will be presented. LABS ARRANGED.

ECHD 105 3 Credits As Demand Warrants
Survey Programs/Young Child (3+0)
Students observe and contrast past and present programs in the community and formulate their own personal philosophy of early childhood education and child care.

ECHD 110 1 Credit As Demand Warrants
Practical Paths to Discipline & Guidance (1+0)
Practical techniques for guidance and discipline of 2-6 year old children.

ECHD 120 3 Credits As Demand Warrants
Nutrition, Health and Safety (3+0)
This course is designed for parents, care-givers and teachers of young children. It focuses on common illnesses and preventive health care, nutritional needs and safety aspects of rearing and teaching young children.

ECHD 121 1Credit As Demands Warrants
Physical Activities Young Child (1+0)
Planning a center which promotes the physical development of children.

ECHD 122 1 Credit As Demand Warrants
Cognitive Activity/Young Child (1+0)
Activities and experiences which encourage questioning, probing, and problem-solving skills which are appropriate for different developmental levels and various learning styles of young children.

ECHD 123 1 Credit As Demand Warrants
Language Activity/Young Child (1+0)
Activities that will help children acquire and use language as a means of communicating their thoughts and feelings. It also includes nonverbal communication and understanding others.

ECHD 124 1 Credit As Demand Warrants
Creative Activity/Young Child (1+0)
Activities which provide a variety of experiences and media that stimulate children to explore and express their creative ability.

ECHD 131 1 Credit As Demand Warrants
Group Management (1+0)
This course emphasizes both direct and indirect guidance techniques. Theories of guidance, including body language effects, reinforcement, and logical consequences are discussed for cultural relevance and practical application.

ECHD 135 2 Credits As Demand Warrants
Developing Programs Infant/Toddler Care (2+0)
Activities to stimulate development and learning of infants and toddlers individually and in a group setting. The class will cover discipline and guidance techniques, communication, health concerns and facility requirements: Weekly 2 hour lab required.

ECHD 161 1 Credit As Demand Warrants
Stories For Young Children (1+0)
Keep your youngster fascinated while you increase their reading readiness! This new course will demonstrate ideas and techniques for a variety of story telling methods. Especially helpful for Early Childhood teachers.

ECHD 162 1Credit As Demand Warrants
Child Development Associate (1+0)
This course is designed to introduce the care giver to the Child Development Associate credential. This is a nationally recognized credential awarded to child caregivers who have successfully demonstrated their competency in working with young children. It is awarded through a grant from the United States Department of Health and Human Services.

ECHD 163 1 Credit As demand Warrants
Learning Centers For Young Children (1+0)
Participants will explore how to use learning centers in preschool classrooms, how to set up learning centers and exchange ideas for learning center.

ECHD 211 1 Credit As Demand Warrants
Developing Positive Self-Concept (1+0)
This course stresses helping each child develop a sense of awareness and self-esteem. Emphasis is placed on providing success-oriented feelings and developing pride as an individual and as a member of a cultural/ethnic group.

ECHD 221 1 Credit As Demand Warrants
Positive Home-Center Relationship (1+0)
Stresses the importance of a positive and productive relationship between families and Child Development centers. Emphasis is on using this relationship to coordinate the child-rearing efforts of both the family and classroom teacher.

ECHD 240 2 Credits As Demands Warrants
Legal Management of Child Care Centers (2+0)
This course will focus on the legal aspects of managing a day care center or pre-school program. Participants will explore some of the liability concerns in out-door environments, food service, material selections, employer/employee relationships, and more.

ECHD 241 Credits As Demand Warrants
Personnel Management in ECD Programs (2+0)
Management of personnel of child care programs, including in-service training, staff meetings and communication, staff supervisor, evaluating staff, staff motivation, burn-out prevention, and termination of employees. Labor management specific to early childhood programs are explored.

ECHD 242 1 Credit As Demand Warrants
Observe/Record Behavior of Child (1+0) This course will emphasize techniques for accurately observing children's behavior, including several methods of observation and techniques for graphing the results.

ECHD 243 3 Credits As Demand Warrants
Personal Development/Child Care Workers (3+0) Students will assess their learning needs as related to their current child care position; select and prioritize goals; consider alternative learning options; and plan and evaluate their professional growth.

ECHD 245 3 Credits As Demand Warrants
Child Development (3+0)
(Same as PSY 245)
Study of development from prenatal through middle childhood including the cognitive, emotional, social and physical aspects of the young child. Course includes child observations. Emphasis is on the roles of heredity and environment in the growth process. (Prerequisite: PSY 101 or permission of the instructor.)

ECHD 250 3 Credits As Demand Warrants
Practicum ECHD I (3+0)
This is a guided student teaching experience in working with a group of 3-6 year old children. The student will assume increasing responsibility for planning and lead teaching. Prerequisite: PSY 245, ECHD 100, 110, 120, 131, 255 and permission of the instructor.

ECHD 251 3 Credits As Demand Warrants
Practicum ECHD II (3+0)
This is a guided field experience in working with a group of young children in a school or center with the intent of expanding on the needs and interests of the practicum student. Students who have demonstrated satisfactory competency in ECHD 250 may choose to participate in an infant toddler center, child care center, early childhood education program or public school classroom. Schedule times and dates to be arranged. (Prerequisite: ECHD 250 and instructor's permission.)

ECHD 255 3 Credits As Demand Warrants
Activities for Young Children (3+0)
Designed for parents, care-givers and teachers of children 2-6. Focus is on art, music, literature, and language experiences, science, math, food experiences, and excursions. Lab required.

ECHD 260 3 Credits As Demand Warrants
Introduction To the Exceptional Child (3+0)
An overview of categories of exceptionality includes hearing and visual impairments; learning, speech and language disabilities; emotional disturbances; physical handicaps; mental retardation; and the gifted and talented. (Prerequisite: PSY 245 or permission of instructor.)

ECHD 265 2 Credits As Demand Warrant
Culture, Learning & The Young Child (2+0)
How culture affects development and learning patterns of young children. Will explore curriculum planning with emphasis on multi-cultural and multi-ethnic resources with special attention on the Alaskan Native Cultures.

Early Childhood Education (Rural College)

Early childhood education courses are not offered on the Fairbanks campus. See "Early Childhood Development" (ECHD) for Fairbanks area offerings.

ECDD 109 1 Credit As Demand Warrants
Orientation to Child Development (3+0)
Students will develop an overall understanding of training programs for early childhood workers with specific training for working in a Child Development Associate program. They will, through in-class exercises, be able to perform as CDA field trainers and/or CDA candidates from on-the-job training into a career ladder leading to a profession in the field of early childhood education.

ECDD 111 1 Credit As Demand Warrants
A Safe Environment (1+0)
The importance of a safe learning environment and includes the competencies which enable students to provide a safe environment for young children. Emphasis is placed on the measures necessary to reduce and prevent accidents. (CDA curriculum)

ECDD 112 1 Credit As Demand Warrants
A Healthy Learning Environment (1+0)
Prepares the student to provide a learning environment for young children which is free of factors which may contribute to or cause illness. (CDA curriculum)

ECDD 113 1 Credit As Demand Warrants
Learning Environment (1+0)
The arrangement of an environment which is conducive to learning and appropriate to the developmental level and learning style of children. It includes selection of materials and equipment, room arrangement, and scheduling. (CDA curriculum)

ECDD 121 1 Credit As Demand Warrants
Physical Activities for Young Children (1+0)
The essentials of planning a center which provides space, materials, equipment, and activities which promote the physical development of children. It includes scheduling, planning, activities, and selection of equipment and materials. (CDA curriculum)

ECDD 122 1 Credit As Demand Warrants
Cognitive Activities for Young Children (1+0)
Activities and experiences which encourage questioning, probing, and problem solving skills which are appropriate for different developmental levels and various learning styles of young children (CDA curriculum)

ECDD 123 1 Credit As Demand Warrants
Communication Activities (1+0)
Activities that will help children acquire and use language as a means of communicating their thoughts and feelings. It also includes nonverbal communication and understanding of others (CDA curriculum)

ECDD 124 1 Credit As Demand Warrants
Creative Activities for Young Children (1+0)
Activities which provide a variety of experiences and media that stimulate children to explore and express their creative ability. (CDA curriculum)

ECDD 131 1 Credit As Demand Warrant
Guidance and Discipline (1+0)
Indirect and direct guidance techniques. Theories of guidance, including body language effects, reinforcement, and logical consequences are discussed for cultural relevance and practical application. (CDA curriculum)

ECDD 132 1 Credit As Demand Warrants
Social Development for the Young Child (1+0)
The development of social skills which enable children to function as productive members of a group. Emphasis is placed on the development of mutual respect and cooperative work/play between child/child and child/adult. (CDA curriculum)

ECDD 211 1 Credit As Demand Warrants
Developing Positive Self-Concepts for Young Children (1+0)
Helping each child develop a sense of awareness and self-esteem. Emphasis is placed on providing success-oriented activities, encouraging acceptance and expression of children's feelings and developing pride as an individual and as a member of a cultural/ethnic group. (CDA curriculum)

ECDD 221 1 Credit As Demand Warrants
Positive Home-Center Relationship (1+0)
The importance of a positive and productive relationship between families and the child development educator. Emphasis is on using this relationship to coordinate the child rearing efforts of both the family and the educator.

ECDD 222 1 Credit As Demand Warrants
Program Management (1+0)
The importance of coordination and communication among staff in the classroom. Emphasis is placed on effective group planning, using resources, improving communication, sharing information about children, maintaining records, and establishing and following policies, rules and regulations. (CDA curriculum)

ECDD 223 1 Credit As Demand Warrants
Professionalism (1+0)
Awareness of one's own personal qualities, feelings, and values that affect the teaching atmosphere; one's relationships with children; one's own teaching style. (CDA curriculum)

ECDD 231 1 Credit As Demand Warrants
Screening (1+0)
Activities which help the teacher to understand the purpose of screening young children and to know how to use good screening procedures. (CDA curriculum)

ECDD 232 1 Credit As Demand Warrants
Assessment/Recording (1+0)
Activities that will help the teacher to understand assessment of young children, recording of assessment information, and staffing. (CDA curriculum)

ECDD 233 1 Credit As Demand Warrants
Mainstreaming Young Children with Special Needs (1+0)
Activities that will help the teacher to understand the concept and purpose of mainstreaming special needs preschool children into the regular classroom. Emphasis is on the rights of the special needs child to service and the necessary procedures for providing the service under Public Law 94-142 (CDA curriculum)

ECDD 289 1 Credit As Demand Warrants
Final Assessment for Child Development Associate Credential (1+0)
The procedures necessary to apply and prepare for final assessment for the Child Development Associate (CDA) credential. It emphasizes needs of a group of children in a child development setting by nurturing and maintaining a proper child care environment and by promoting good relations between parents and the child development center. (CDA curriculum)

ECDD 299 1-3 Credits As Demand Warrants
Practicum in Early Childhood Education
A pracitical application of all previous CDA competency courses. The student will assume responsibility for seven or more children in an approved preschool program. (CDA curriculum)

*All Early Childhood Education courses must be accompanied by a lab experience in a facility for children ages 0-5.

Economics

Admittance to upper division School of Management courses will be granted only to students with junior standing or above. Others will be admitted only with the written permission of the appropriate department head.

ECON 101 3 Credits Fall and Spring
Introduction to Current Economic Problems (3+0) s
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, pollution, poverty, etc.

ECON 111 3 Credits As Demands Warrants
Economics of Rural Alaska (3+0)
Introduction to basic economic concepts as they relate to issues and problems of contemporary regional development in rural Alaska. Special attention is paid to socio-economic consequences of the introduction of new technologies, modern economic intra-structures and corporate relationships to traditional, small scale communities.

ECON 137 3 Credits Spring
The Alaskan Economy (3+0) s
A broad introductory examination of economic problems in Alaska; analysis of historical trends and current patterns of economic growth; particular emphasis on present and future alternative economic policies, and their potential impacts.

ECON 201 3 Credits Fall and Spring
Principles of Economics I: Microeconomics (3+0) s
Theory of prices and markets, income distribution, contemporary problems of labor, agriculture, market structure, pollution, etc.

ECON 202 3 Credits Fall and Spring
Principles of Economics II: Macroeconomics (3+0) s
Analysis and theory of national income, money and banking, and stabilization policy.

ECON 226 3 Credits Fall and Spring
Introduction to Statistics for Economics and Business (3+0)
Problems in economics and business translated into statistical terms. Topics covered include descriptive measures, probability and probability distributions, sampling methods, sampling distributions, point and interval estimation, hypothesis testing, index numbers, and time series analysis. (Prerequisite: MATH 107-108 or MATH 161.)

ECON 227 3 Credits Fall and Spring
Intermediate Statistics for Economics and Business (3+0)
Extension of topics developed in ECON 226. Development of statistical techniques and their application to economic and business problems. Topics include simple and multiple regression and correlation, analysis of variance, forecasting techniques, quality control, non-parametric methods, and decision theory. Materials fee: $20.00 (Prerequisites: ECON 226, MATH 162 or 200.)

ECON 235 3 Credits Fall
Introduction to Natural Resource Economics (3+0) s
Introduction to microeconomic principles and their application to natural resource issues. Specific topics include supply, demand, marginality, optimality, elementary production economics, economic rent, and comparative advantage. These principles are applied to agency budget allocation decisions, multiple use, resource valuation, conservation, market failure, and public outdoor recreation problems.

ECON 321 3 Credits Fall
Intermediate Microeconomics (3+0) s
Analysis of demand and supply under various market forms, cost and theory of production, factor pricing and theory of distribution, and survey of welfare economics. (Prerequisites: ECON 201, 202 and MATH 162 or equivalent.)

ECON 322 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. Materials fee: $10.00 (Prerequisites: ECON 201, 202 and 227 and MATH 162 or equivalent.)

ECON 324 3 Credits Spring
Intermediate Macroeconomics (3+0) s
Concepts and measurement of income, analysis of aggregate demand and supply and their relation to the level of prices, employment, and economic growth. (Prerequisites: ECON 201, 202 and MATH 162 or equivalent.)

ECON 335 3 Credits Spring
Intermediate Natural Resource Economics (3+0) s
Extension of concepts developed in ECON 235, using a higher level of economic analysis in examining natural resource issues. Specific topics include welfare economics and economic efficiency concepts, benefit/cost analysis, resource allocation overtime, resource taxation, common property problems, externalities, public goods, valuation of non-market resources, and land use planning issues. (Prerequisites: ECON 201 or ECON 235.)

ECON 350 3 Credits Fall
Money and Banking (3+0) s
The liquid wealth system in the United States, to include the commercial banking system, the Federal Reserve System, and nonbank financial institutions; the regulation of money and credit and its impact on macroeconomic policy objectives. (Prerequisites: ECON 201 and 202.)

ECON 351 3 Credits Alternate Fall
Public Finance (3+0) s
Economic justifications for government; federal, state and local government, taxation, spending and debt; their effects on allocation, distribution, stabilization and growth. (Prerequisites: ECON 201 and 202. Next offered 1989-90.)

ECON 409 3 Credits As Demand Warrants
Industrial Organization and Public Policy (3+0) s
The study of the relationship of market structure to the economic conduct and performance of firms and industries, the determinants, measurement and classification of market structure, public policy toward mergers, industrial concentration, and aggregate concentration. (Prerequisites: ECON 201, 202, and 321.)

ECON 420 3 Credits Fall
Labor Markets and Public Policy (3+0) s
The application of labor market analysis and wage theory as they relate to public policy issues. Topics include: determination of wages, taxation and employment, the economic impact of unions, the economics of discrimination, and issues relating to women's and minorities' changing roles in the labor market. (Prerequisites: ECON 201 and 202.)

ECON 436 3 Credits As Demand Warrants
Energy Economics (3+0) s
A course concerned with market forces and institutions affecting the allocation of energy resources. Special attention is given to intertemporal allocative decisions and the role that public policy plays in influencing the rate at which energy resources are used over time. (Prerequisites: ECON 201 or 235.)

ECON 437 3 Credits Alternate Fall
Regional Economic Development (3+0)
Determinants and effects of the spatial distribution of economic activity. Impact of public policy on regional development within the Alaska context. (Prerequisites: ECON 201 and 202. Next offered: 1990-91.)

ECON 438 3 Credits As Demand Warrants
The Economics of Fisheries Management (3+0)
The course will provide a review of theoretical economic concepts as they are applied to the management of a commercial fishery, as well as an introduction to major current management policy issues affecting United States' commercial fishing. Major emphasis will be placed on the practical application of the economic theory and policy insights derived from the course to the problems of the management of Alaska's fisheries. (Prerequisites: ECON 201, or equivalent, or ECON 235.)

ECON 451 3 Credits Spring
Public Expenditure Analysis (3+0)
Purposes and economic effects of governmental expenditures, budgeting techniques, and their effects on resource allocation. (Prerequisite: ECON 201 and 202 or equivalent.)

ECON 463 3 Credits Fall
International Economics (3+0) s
Pure theory of international trade: comparative cost, terms of trade, and factor movements. International disequilibrium: balance of payments and its impact on national economy, capital movement, economic development through international trade. (Prerequisites: ECON 201 and 202.)

ECON 475 1-3 Credits Fall and Spring
Economic Internship
Designed to give students the opportunity to do research or other practical work with business, governmental agencies, or research organizations. (Prerequisite: Admission by permission of instructor.)

ECON 601 3 Credits **Fall**
Microeconomic Theory I (3+0)

ECON 603 3 Credits **Spring**
Macroeconomic Theory I (3+0)

ECON 611 3 Credits **Fall**
Principles of Economic Analysis (3+0)

ECON 623 3 Credits **Fall**
Mathematical Economics (3+0)

ECON 624 3 Credits **Fall**
Managerial Economics (3+0)

ECON 626 3 Credits **Spring**
Econometrics (3+0)

ECON 635 3 Credits **Fall**
Resource Economics I (3+0)

ECON 636 3 Credits **Spring**
Resource Economics II (3+0)

ECON 670 0 Credit **Spring**
Seminar in Research Methodology (1+0)

Education

ED 106 3 Credits **As Demand Warrants**
Reading Activities in the Classroom (3+0)
Introduction to methods, materials and teaching of reading the classroom. Emphasis on techniques for working with small groups and for integrating a language experience approach, using personal language backgrouds with basal reading programs. Attention focussed on teacher's guides and participation in demonstration lessons.

ED 131 3 Credits **As Demand Warrants**
Implementation of an Adult Education Program (3+0)
This course covers a variety of areas necessary for setting up a village-based adult education program and its implementation. It includes: organizing the classroom, equipment and materials; grades and record keeping, testing and assessing appropriate levels of materials for individual students; lessons plans, as well as history and functions of adult education; funding teacher education and evaluation tools.

ED 141 3Credits **As Demand Warrants**
Introduction to Methods and Materials in Bilingual Education (3+0)
Methods and problems of teaching in and preparing material for the bilingual classroom in the areas of reading, language arts, social studies, mathematics, sciences, art, music and health including lesson planning and scheduling. All materials are to be made in both the appropriate language of the children and English. Teaching teams are encouraged. Recommended: Literacy in both languages of instruction.

ED 200 2-6 Credits **As Demand Warrants**
Peer Tutoring (1+3 to 6)
For students interested in the teaching profession or for those who wish to share their expertise in a content area, Peer Tutoring offers an opportunity to explore and practice tutoring issues and techniques. Students may take the Institute section (3 weeks) and/or the Learning Activities Center section (12 weeks). The course combines lecture and lab time. Lab time is arranged for variable credit; the course may be repeated for up to six credits.

ED 201 3 Credits **Fall and Spring**
Introduction to Education (2+3)
The prospective teacher is acquainted with the nature of teaching including the scholastic, professional, and personality requirements for effective teaching. Involves laboratory time in public schools as teacher's aide. Open to all students. Required for all students majoring in Education. (Prerequisite: Sophomore standing.)

ED 208 3 Credits **As Demand Warrants**
Art for the Classroom Teacher (3+0)
Introduce concepts in art education to persons with limited art background who are working with young children. It combines a philosophy of Art Education, Art History, and 'hands-on' experiences to enable the classroom teacher to more effectively integrate the visual arts into the classroom curriculum as enjoyment and enrichment. Can also be taken as ART 208.

ED 210 3 Credits **As Demand Warrants**
Second Language Acquisition (3+0)
This course presents an intensive introduction to the study of how people acquire second languages, i.e., ones in addition to the ones they learn as young children in the home. We examine psychological, social and cultural aspects of second language acquisition including theory of second language acquisition, applied linguistic and sociolo-linguistic research, and insights of teachers and students of second languages. We also observe, analyze, and compare the acquisition of languages by people in the students' own communities. Throughout, the emphasis is on how second language acquisition studies can enlighten the practice of second language teaching and promoting bilingualism in western Alaska.

ED 211 3 Credits **As Demand Warrants**
Methods of Materials for Teaching a Second Language (3+0)
Intensive work in learning a broad repertoire of second language teaching methods, how to develop lesson plans (including writing and measuring instructional objectives), and discussing why these educational skills can make a marked difference in a teacher's classroom performance. The course includes designing, teaching, and assessing actual lessons. (Prerequisites: experience as an educator in a bilingual/bicultural or second language classroom or permission of instructor.)

ED 212 3 Credits **As Demand Warrants**
Curriculum Development for Teaching a Second Language (3+0)
Intensive work in developing scopes and sequences for unit plans and yearly/mult-year curricula for teaching a second language. (Prerequisites: Experience in a second language classroom or permission of instructor; ED 211 strongly recommended)

ED 213 3 Credits **As Demand Warrants**
Human Development and Learning (3+0)
Content is a synthesis of the interrelated principles of human growth, development, adjustment and learning. It is designed primarily for students preparing for a career in teaching but is also open to parents, counselors, community workers and others interested in human development and learning.

ED 214 3 Credits **As Demand Warrants**
Natural Approaches to Language Instruction (3+0)
A course in which students explore modern approaches, methods, techniques, and activities which have been proven to be successful in teaching second languages.

ED 215 3 Credits **As Demand Warrants**
Methods of Teaching a Second Language (3+0)
Provides student with a basic knowledge of second language acquisition theory. Students will learn to adapt materials for teaching Inupiaq, Yup'ik or English as a second language, and write and implement second language lesson plans. Attention paid to practicing different methods of instruction.

ED 216 3 Credits **As Demand Warrants**
Children's Literature (3+0)
A survey of children's literature and storytelling from around the world, including a study of criteria for evaluation of books and related materials. The course emphasizes methods of encouraging children's appreciation of a variety of selections. Students may do concentrated study of materials for a specific age group within the range of 1-12 years.

ED 220 3 Credits **As Demand Warrants**
Culture and Learning (3+0)
Students will acquire a basic understanding of the role of culture in human development. They will, through reading and discussion, study the learning process in various cultural contexts. Attention will be given to problems of conflicting cultures and role of education in a changing world and as an agent of change.

ED 241 3 Credits **As Demand Warrants**
Methods and Materials in Billingual Education (3+0)
A overview of bilingual instruction. Students will make and adapt materials for the classroom. Attention is paid to practicing different methods of instruction.

ED 245 3 Credits **As Demand Warrants**
Child Development (3+0)
A study of the physical, emotional, cognitive, and social aspects of a child's development from the prenatal period through early adolescence. (Prerequisites: Psy. 101 or permission of instructor)

ED 262 3 Credits As Demand Warrants
Methods of Teaching English as a Second Language and Standard English as a Second Dialect (3+0)
(Same as Ling. 262)
Introduction to second language teaching methods, using English as a Second Language (ESL) and Standard English as a Second Dialect (SESD) for the examples. The class covers basic underlying assumptions about the nature of language, language learning, language teaching, characteristics of good language learners, optimal language learning environments, and what affect they have on how we teach. The different roles of the second language teacher and their appropriateness is covered. Several specific language teaching methods, techniques and activities consistent with these methods, and adaptation of these methods to the needs of western Alaska classrooms is also presented. (Prerequisites: Class room experience)

ED 275 3 Credits Fall and Spring
Introduction to Microcomputers for Teachers (3+0)
This course will provide information about and understanding of computer technology and its present and potential impact on the field of education. Students will learn basic microcomputer terminology and operation, be introduced to a variety of classroom applications of computer technology, and develop judgement skills related to hardware and software utilization in the classroom. (Prerequisites: ED 201 or concurrent enrollment in ED 201.)

ED 099, 199, 299 1-3 Credits As Demand Warrants
Practicum in Education
Individualized work experience. Credit is variable from 1 to 3 credits, depending upon the quality and quantity of the work experience. Credit may be earned in most disciplines and programs.

ED 303 3 Credits As Demand Warrants
Language and Literacy Development (3+0)
(Same as Ling. 303)
Principles, procedures, and materials for enhancing the language development of young children. (Prerequisite: Psy. 240.)

ED 304 3 Credits Fall and Spring
Literature for Children (3+0)
Criteria for evaluating children's books and application of criteria to books selected by student, study of outstanding authors, illustrators and content of specific categories of literature, book selection aids, and effective use of literature to promote learning. (Prerequisite: Junior standing.)

ED 309 3 Credits Fall
Elementary School Music Methods (3+0)
(Same as Mus 309)
Principles, procedures, and materials for teaching music to children at the elementary level. (Prerequisite: ED 330.)

ED 310 3 Credits Fall and Spring
Modes of Creative Expression in Education (3+0)
A study of a variety of modes for stimulating creative expression in an educational setting such as art, music, dance, drama, photography and creative writing. Particular emphasis will be on methods of incorporating these modes into teaching practices, to enhance the interest in, and quality of learning. (Prerequisite: ED 330.)

ED 311 2 Credits Spring
Audio-Visual Methods and Materials (1+3)
Selection and use of audio-visual materials in teaching and learning at all levels of education. (Prerequisite: ED 330.)

ED 330 3 Credits Fall and Spring
Diagnosis and Evaluation of Learning (3+0)
Detailed information about the teaching-learning process in the classroom emphasizing making teaching decision. The student will learn the strengths and weaknesses of various forms of diagnosis and evaluation of learning, with particular emphasis on problems encountered in cross-cultural settings. Attention will be given to informal, formal, process, and product assessment. (Prerequisites: PSY 240: concurrent enrollment in PSY 240/ED 330 permissible for students with senior standing or earned degree.)

ED 333 3 Credits As Demand Warrants
History of Childhood (3+0)
Surveys child rearing practices in the major cultures of the world examining how parents and children related to each other in different time periods. Examines the central force for change in history as psychogenic changes in personality, occurring between parent-child interaction through successive generations. (Prerequisite: Junior standing.)

ED 338 3 Credits As Demand Warrants
Education and Economic Development (3+0)
(Same as R.D. 338)
An examination of both theory and evidence linking varied forms of education to economic growth and development. A comparative approach is utilized to explore similarities and differences between rural Alaskan regional development and systematic nation-building efforts in developing countries. (Prerequisite: Permission of instructor.)

ED 345 3 Credits As Demand Warrants
Sociology of Education (3+0)
(Same as SOC 345)
Examination of the ways in which social, political, and economic forces influence what happens in schools with focus on how the organization of schools affects what teachers can do in the classroom, how peer groups affect student learning, and how national political and economic concerns determine what becomes an educational issue. (Prerequisites: SOC 101 and Junior standing.)

ED 346 3 Credits As Demand Warrants
Structure of American Education (3+0)
Fundamentals of public school organization, control and support in relation to federal, state and local agencies. Issues related to the structure and delivery of educational services are analyzed with particular attention given to issues in Alaska. (Prerequisite: Junior standing in Education.)

ED 350 3 Credits Fall and Spring
Communication in Cross-Cultural Classrooms (3+0)
An interdisciplinary examination of communication and language in cross-cultural educational situations, including language, literacy, and inter-ethnic communication as they relate directly to classrooms in Alaska. (Prerequisites: LING 101 or ANL 215 or ANL 216 or permission of instructor.)

ED 375 3 Credits Fall and Spring
The Exceptional Learner (3+0)
An overview course which develops the foundation for understanding, identifying and serving the exceptional learner in rural and urban settings. A special emphasis is placed on working with exceptional learners in the regular classroom. The unique needs of exceptional students in rural settings from bilingual/multicultural backgrounds is a part of the course. (Prerequisites: ED 201 and PSY 240.)

ED 380 3 Credits As Demand Warrants
Cultural Influences in Education (3+0)
Interdisciplinary study of the educational problems, concerns and successes encountered by students and teachers in a variety of cultural contexts. Students will consider social, cultural and psychological factors inherent in the educational process and how they are affected by the multicultural setting through an investigation of a variety of cultural contact situations. Specific attention will be given to curriculum improvement and teaching strategies appropriate for the multicultural classroom and school. (Prerequisite: ED 330 and junior standing).

ED 381 3 Credits Fall and Spring
Foundations of Literacy Development (2.5+1.5)
The development of understanding of the process involved in becoming a literate person. Language, reading, and writing development will be explored for children of varying ages and within various social contexts, with particular emphasis on the impact of out-of-school styles on school literacy instruction. Students may be asked to tutor at least one child. (Prerequisites: PSY 240 and ED 330. Should be taken the semester prior to enrolling in ED 421.)

ED 402 3 Credits Fall and Spring
Methods of Teaching in the Secondary School (2+3)
Principles and methods of teaching appropriate for junior high and high school classrooms. Includes planning for effective teaching, classroom management, and the implementation of teaching plans in classroom settings. Materials fee: $35.00. (Prerequisite: ED 201; admission to Teacher Education Program. This course should be taken the semester prior to ED 453.)

ED 407 3 Credits Fall and Spring
Reading Strategies for Secondary Teachers (3+0)
Techniques and materials to be used in helping the secondary students acquire the skills necessary for greater comprehension of subject matter at the secondary level. Should be taken concurrently with ED 402. (Prerequisites: ED 330 and junior standing.)

ED 419 6 Credits Fall and Spring
Integrated Methods and Curriculum Development (3+9)
The study of the unique and common concepts, content, methods and materials which characterize the teaching of mathematics, science, social studies and language arts; the development of written plans and units; and practical experience in the elementary schools. (Prerequisites: MATH 204, PSY 240, ED 330, concurrent enrollment with ED 421. Should be taken semester prior to student teaching.)

ED 421 3 Credits As Demand Warrants
Multi-Cultural Classrooms (2.5+1.5)
Methodology, instructional materials, and language arts content relevant to the instruction of developmental language, reading and writing in diverse K-8 classrooms. Includes limited filed experience. (prerequisites: PSY 240, ED 330 and ED 381. Should be taken the semester after completing ED 381 and the semester prior to student teaching. Concurrent enrollment with ED 419 required.)

ED 424 3 Credits Fall
Small High School Programs (2+3)
After examining secondary programs in general, students will be exposed to alternative approaches to the design of small high school programs, with particular emphasis on the problems of designing secondary programs for the small rural communities of Alaska. (Prerequisites: ED 201; admission to Teacher Education Program. This course should be taken the semester prior to ED 453.)

ED 425 3 Credits Spring
Community as an Educational Resource (2+3)
Practical experience to assist the student in developing greater awareness of the community as an educational resource. Methods and techniques for developing and implementing a community-oriented curriculum with practical experience in determining and using community resources will be provided. (Prerequisites: ED 201; admission to Teacher Education Program. This course should be taken the semester prior to ED 453.)

ED 429 3 Credits Spring
Microcomputer Application in the Classroom (2+2)
Strategies for the effective use of microcomputers in the classroom; understanding of the potentials and limitations of the computer in the schools; developing classroom plans to take advantage of computer potentials; and evaluation of educational software. (Prerequisites: Upper-division undergraduate or certified teacher status.)

ED 430 3 Credits Fall and Spring
Multicultural Teaching Techniques (2+3)
Development of effective teaching strategies for implementation in cross-cultural and multicultural classrooms with particular attention to instructional practices for secondary schools (small school design, computer-based instruction, telecommunications, community-based education, interdisciplinary linkages of coursework, experiential education, productive thinking skills, and individual programmed instruction). Guest lectures and field trips. There will be weekly participation in a practical experience in multicultural classrooms. (Prerequisites: ED 201; admission to Teacher Education Program. This course should be taken the semester prior to ED 453.)

ED 450 3 Credits As Demand Warrants
Education and Cultural Transmission (3+0)
Education as a process for transmitting culture with examination of various issues related to cultural transmission in a multi-cultural environment, with particular emphasis on the dynamics of cultural change. (Prerequisite: ED 330 and junior standing.)

ED 451 1-9 Credits Fall and Spring
Practicum in Education
Practical application of general ideas and techniques addressed in the methods courses in which the student is currently enrolled or previously completed. (Prerequisites: ED 201, ED 330, ED 402 or equivalent; concurrent enrollment permitted with ED 402, and permission of instructor.)

ED 452 12 Credits Fall and Spring
Elementary Student Teaching (1+33)
Supervised teaching in elementary schools approved by the department of education. The school may limit registration, determine assignments, and cancel the registration of students doing unsatisfactory work. Students should expect to be involved in the public school setting for the entire school day for the duration of the university semester in fulfilling their assignment. (Prerequisites: See requirements for admission to student teaching.)

ED 453 12 Credits Fall and Spring
Secondary Student Teaching (1+33)
Supervised teaching in secondary schools approved by the department of education. The school may limit registration, determine assignments, and cancel the registration of students doing unsatisfactory work. Students should expect to be involved in the public school setting for the entire school day for the duration of the university semester in fulfilling their assignment. (Prerequisites: See requirements for admission to student teaching.)

ED 454 12 Credits Fall and Spring
Student Teaching K-12 (1+33)
Supervised teaching in both elementary and secondary schools approved by the department of education. Open only to Music and P.E. majors seeking K-12 certification or to graduate students seeking K-12 small school certification. The department may limit registration, determine assignments, and cancel the registration of students doing unsatisfactory work. Students should be expected to be involved in the public school setting for the entire school day for the duration of the university semester in fulfilling their assignment. (Prerequisites: See requirements for admission to student teaching.)

ED 456 3 Credits Summer
Orientation to Teaching in Rural Alaska (2+3)
A study of the needs of rural schools, their environments and the recipients of school services with special attention given to cross-cultural educational issues. (Prerequisite: permission of instructor.)

ED 462 3 Credits Fall
Alaskan Environmental Education (3+0)
(Same as A.L.R. 462)
Environmental concepts, motivational and discovery techniques, and practical skills for utilizing the environment inside and outside the formal classroom in all subject areas. Course content includes information on curriculum materials (K-12), interpretive and audiovisual aids facilities, environmental problem solving and applications of environmental education to situations from the public schools to summer campus, short courses, and workshops for individuals of any age. (Prerequisites: Junior standing or permission of instructor.)

ED 470 3 Credits As Demand Warrants
Human Resource Development (3+0)
Strategies and approaches which emphasize the mobilization and utilization of human resources within the general processes of socio-economic change and development in historical and cross-national contexts. (Prerequisite: Junior standing.)

ED 473 3 Credits Spring
Marine Education (3+0)
Instructional techniques and methods for integrating marine and freshwater programs into schools and communities. The elementary school Alaska Sea Week Curriculum Guides, plus a variety of secondary level marine education materials, their design and implementation will be highlighted as well as a survey of marine biology, oceanography, fisheries, birds, marine mammals, freshwater ecology and the social and political implications of coastal and river issues. (Prerequisites: Biol. 105-106 and Ocn. 111 or its equivalent.)

ED 475 3 Credits Alternate Spring
LOGO: A Computer Language for Teachers (3+0)
The study of the use of the LOGO language with Apple computers including the implications of this language for education and ways in which it can be incorporated into the curriculum. (Prerequisite: Upper division undergraduate or certified teacher status. Next offered: 1990-91.)

ED 490 3 Credits Fall and Spring
Curriculum Development in Cultural Perspective (3+0)
An examination of issues related to the development of curriculum programs and materials in a cross-cultural environment. Emphasis will be on process, context, and content of curriculum as well as curriculum change and evaluation strategies. Students will work on a curriculum development project applicable to their individual circumstances. (Prerequisite: ED 330.)

ED 582 4 Credits Fall
Teaching as Reflective Inquiry (3+3)
Reflective inquire into the social organization and cultures of large and small schools. Study of motivations of teachers and stages of professional development. Study of context of teaching: legal framework, school finance, history of American education and education in Alaska. (Prerequisites: Baccalaureate degree; admission to Teacher Education Program.)

ED 583 8 Credits Fall
Teaching as Decision-Making and Invention (4+0+8)
Considers appropriate educational purposes in such subjects as English, mathematics, social studies, cultural studies and science. Study of methods and research concerning teaching of major subject areas. Exploration of lesson design, curriculum development, social organization of classroom, evaluation and testing, and needs of special students. Examines these issues in multicultural contexts. (Prerequisites: Baccalaureate degree: admission to Teacher Education Program.)

ED 584 3 Credits Fall
Practicum: Teaching in Small and Large Schools (0+6)
Accompanies Ed 583 and serves as laboratory where students can explore concepts and methods of teaching such subjects as English, mathematics, social studies, cultural studies, and science. Students observe, assist teachers, and prepare lessons in the public schools. Should be taken concurrently with ED 583. (Prerequisites: Baccalaureate degree: admissions to Teacher Education Program.)

ED 601 3 Credits Alternate Fall
Introduction to Educational Research Methods (3+0)

ED 602 3 Credits Alternate Spring
Proseminar in Applied Educational Research (1+6)

ED 603 3 Credits Alternate Spring
Field Study Methods in Educational Research (3+0)

ED 610 3 Credits Alternate Fall
Education and Cultural Processes (3+0)

ED 611 3 Credits As Demand Warrants
Learning, Thinking, and Perception in Cultural Perspective (3+0)

ED 612 3 Credits Alternate Spring
Cultural and Philosophical Foundations of Education (3+0)

ED 615 3 Credits Alternate Spring
Social Organization of Classrooms and Learning (3+0)

ED 616 3 Credits As Demand Warrants
Education and Socio-Economic Change (3+0)

ED 618 3 Credits As Demand Warrants
Higher Education: Basic Understandings (3+0)

ED 619 3 Credits Spring
Reflective Inquiry into Multicultural Classrooms and Communities (1+6)

ED 620 3 Credits Alternate Fall
Language, Literacy and Learning (3+0)

ED 621 3 Credits Alternate Spring
Cultural Aspects of Language Acquisition (3+0)

ED 630 3 Credits Alternate Fall
Curriculum Theory (3+0)

ED 631 3 Credits Alternate Fall
Small Schools Curriculum Design (3+0)

ED 633 3 Credits As Demand Warrants
Computer Tools for Teachers: Word Processing and Telecommunications (1+6)

ED 635 3 Credits As Demand Warrants
Strategies for Cooperating Teachers (3+0)

ED 636 3 Credits As Demand Warrants
The Improvement of Elementary Teaching (3+0)

ED 645 3 Credits Summer
Small Schools Institute (2+3)

ED 650 3 Credits Alternate Fall
Organizational Behavior in Schools (3+0)

ED 651 3 Credits Alternate Spring
Large and Small School Management Processes (3+0)

ED 652 3 Credits Alternate Fall
Effective Schooling Practices (3+0)

ED 653 3 Credits Alternate Spring
Instructional Leadership in Public Schools (3+0)

ED 654 3 Credits Alternate Spring
School Law (3+0)

ED 655 3 Credits As Demand Warrants
Public School Finance (3+0)

ED 660 3 Credits Alternate Spring
Educational Administration in Cultural Perspective (3+0)

ED 664 3-6 Credits Fall and Spring
Internship: Principal's Endorsement (0+9)

ED 665 3-6 Credits Fall and Spring
Internship: Superintendent's Endorsement (0+9)

ED 682 3 Credits Spring
Designing Learning Environments (2+3)

ED 690 3 Credits Alternate Spring
Seminar in Cross-Cultural Studies (3+0)

ED 691 3 Credits As Demand Warrants
Contemporary Issues in Education (3+0)

Electrical Engineering

EE 102 3 Credits Spring
Introduction to Electrical Engineering (3+0)
Basic modern devices, concepts, technical skills, and instruments of electrical engineering. (Corequisite: MATH 200.)*

EE 203 4 Credits Fall and Spring
Electrical Engineering Fundamentals I (3+3)
Analysis of alternating-current circuits using complex notation and phasor diagrams, resonance, transformers, Fourier analysis, the complex frequency plane, and three-phase circuits. Introduction to network and system analysis. Laboratory fee: $25.00. (Prerequisites: MATH 200, EE 102.)*

EE 204 4 Credits Fall and Spring
Electrical Engineering Fundamentals II (3+3)
Electronics of vacuum and solid state devices, amplifier design, digital circuits, energy conversion, electromechanics, control systems, and instrumentation. Laboratory fee: $25.00. (Prerequisite: EE 203.)*

EE 303 4 Credits Fall
Electrical Machinery (3+3)
Electromechanical energy conversion principles, characteristics and applications of transformers, DC machines, synchronous and induction machines. Introduction to electric power systems. Laboratory fee: $25.00. (Prerequisite: EE 204.)*

EE 311 3 Credits Fall
Applied Engineering Electromagnetics (3+0)
Analysis and design of transmission lines and distributed linear circuits using impedance concepts. Development of electromagnetic field equations and their relation to circuit models. Magnetostatics and the magnetic circuit. Electromagnetic wave propagation. Application of the wave equation to engineering systems. (Prerequisites: PHYS 211, MATH 302, EE 204.)

EE 312 3 Credits Spring
Electromagnetic Waves and Devices (3+0)
Theory and design of antennas, waveguides and other periodic structures. Antenna arrays, broadband design techniques and related topics. Theory and design of practical communication links. (Prerequisites: EE 311, EE 331, MATH 302.)

EE 331 1 Credit Fall
High Frequency Lab (0+3)
Laboratory experiments in transmission lines, impedances, bridges, scattering parameters, hybrids, and waveguides. Laboratory fee: $25.00. (Corequisite: EE 311.)*

EE 332 1 Credit Spring
Electromagnetics Laboratory (0+3)
Use of Maxwell's equations in the analysis of waveguides, cavity resonators, transmission lines,antennas, and radio propagation. Laboratory fee: $25.00. (Corequisite: EE 312.)

EE 333 4 Credits Fall
Physical Electronics (3+3)
Basic properties of semiconductors. Principles of semiconductor devices diodes, transistors, and integrated circuits. Laboratory fee: $25.00. (Prerequisite: EE 204.)*

EE 334 4 Credits Spring
Electronic Circuit Design (3+3)
Application of semiconductor devices in the design of circuits used in computation, automatic control, and communication. Laboratory fee: $25.00. (Prerequisite: EE 333.)*

EE 341 4 Credits Fall
Computer Organization I (3+3)
Modular structure of computer systems: hardware and firmware techniques of realizing logical functions and types and purposes of peripherals with methods of interface. Laboratory fee: $25.00. (Prerequisites: CS 201 and one year of college physics.)

EE 342 4 Credits Spring
Computer Organization II (3+3)
Techniques of constructing input/output device drivers, dedicated signal processors, and central processor unit microprogrammable bit slice devices. Laboratory fee: $25.00. (Prerequisite: EE 341.)

EE 353 3 Credits Fall
Circuit Theory I (3+0)
Transient analysis by Laplace transform, state variable, and Fourier methods, filter networks, and computer aided analysis. (Prerequisite: EE 204.)*

EE 354 3 Credits Spring
Engineering Signal Analysis (3+0)
Analysis of both continuous and discrete-time signals and systems. Fundamentals and applications of probability, statistics and stochastic processis to linear, time-invariant systems. Development and applications of convolution, z-transform and Laplace transform theory to filters, modulation, multiplexing, sampling, interpolation, and related processes. (Prerequisite: EE 353, MATH 302.)

EE 404 4 Credits Spring
Electrical Power Systems (3+3)
Alternate energy sources, transmission system components, elements of control, system protection, and interconnections. Laboratory fee: $25.00. (Prerequisite: EE 303.)*

EE 406 4 Credits Fall
Electrical Power Engineering (3+3)
Symmetrical and unsymmetrical faults, load flow, economic operation of power systems, dynamic power system, stability, and computer aided fault and load flow analysis. Laboratory fee: $25.00. (Prerequisites: EE 404 or equivalent.)

EE 434 3 Credits Spring
Instrumentation Systems (2+3)
Analysis and design of instrumentation systems: static and dynamic characteristics; accuracy, noise, reliability; sensors; signal conditioning; typical measurement systems. Laboratory fee: $25.00. (Prerequisites: EE 334, EE 354, EE 442.)

EE 442 4 Credits Fall
Digital Systems Analysis and Design I (3+3)
Combinational and Sequential logic implementation with Medium Scale Integration (MSI) Algorithmic State Machine (ASM) design and implementation with Medium and Large Scale Integration (MSI/LSI) and microprocessors; Central Processor Unit (CPU) analysis and implementation with microprogrammable, "bit-slice" hardware; basic microcomputer input/output (I/O); digital data transmission techniques. Laboratory fee: $25.00.** (Prerequisites: EE 204 and EE 333 - may be taken concurrently.)

EE 443 4 Credits Spring
Digital Systems Analysis and Design II (3+3)
Microcomputer interfacing; timing/transmission line effects in logic design; analog-digital and digital-analog converters; basic digital filtering with microcomputers; 8 bit and 16 bit microprocessor organization, operation and programming; computer peripherals; digital signal processing hardware. Laboratory fee: $25.00.** (Prerequisite: EE 442.)

EE 451 3 Credits Fall
Digital Signal Processing (2+3)
Discrete Fourier Transform (DFT) analyses and applications; FFT implementations; discrete convolution/correlation/statistical theory with application; errors and noise analysis; FIR/IIR filter design and implementation techniques. Laboratory fee: $25.00. (Prerequisites: EE 354 or equivalent.)

EE 454 4 Credits Spring
Advanced Digital Systems Application and Design (3+3)
Advanced, topical applications of digital techniques in the areas of high speed signal processing, process control, data transmission and speech synthesis. Emphasis on recent developments and custom design. Laboratory fee: $25.00. (Prerequisites: EE 442 and senior standing.)

EE 461 4 Credits Fall
Communication Systems (3+3)
Utilization of communication theory in the design and implementation of communication systems. Laboratory measurement of modulation, noise, channel spectrum, satellite link budget, and microwave path design. Laboratory fee: $25.00. (Prerequisites: EE 354 and senior standing.)

EE 462 4 Credits Spring
Communication Systems (3+3)
Theory and practice of communications systems, introduction to probability, statistics, and information theory, systems design and laboratory experience in analog and digital communication. (Prerequisite: EE 354, EE 334.)*

EE 464 3 Credits Spring
Communication Networks (3+0)
Design of voice and data communication networks. Traffic measurement, network topology, circuit sizing, and network performance measures. Tariffs and economic considerations. Cost-performance relationships. (Prerequisites: EE 354 and senior standing.)

EE 471 4 Credits Spring
Fundamentals of Automatic Control (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; introduction to sampled data systems. (Prerequisites: EE 353 and MATH 302.)*

EE 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. Laboratory fee: $25.00. (Prerequisites: 1 year of college physics; Corequisite: MATH 200.)*

EE 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. Laboratory fee: $25.00. (Prerequisite: EE 481 or equivalent.)*

EE 603 3 Credits As Demand Warrants
Advanced Electric Power Engineering (3+0)

EE 604 3 Credits As Demand Warrants
Electric Power System Modeling and Transients (3+0)

EE 610 3 Credits Alternate Fall
Linear Systems (3+0)

EE 632 3 Credits As Demand Warrants
Quantum Electronics (3+0)

EE 635 3 Credits As Demand Warrants
Advanced Electronic Circuit Design (3+0)

EE 662 3 Credits As Demand Warrants
Communication Theory (3+0)

EE 664 3 Credits As Demand Warrants
Data Communication Techniques (3+0)

EE 671 3 Credits As Demand Warrants
Digital Control Systems (3+0)

Electronics Technology

ELT 101 4 Credits As Demand Warrants
Basic Electronics: DC Physics (3+0)
Basic terms and units. Use of test equipment, hand tools and techniques of soldering. Ohm's law, fundamentals of magnetism, DC circuit analysis, inductance and capacitance in DC circuits.

ELT 102 4 Credits As Demand Warrants
Basic Electronics: AC Physics (3+0)
Principles of alternating current, vectors, phase relationships, inductive and capacitive reactance, and impedance. AC circuit analysis, series and parallel resonant circuits. Transformers, network analysis.

ELT 108 3 Credits As Demand Warrants
Arithmetic for DC Circuits (3+0)
Review of arithmetic. Selected topics in algebra, trigonometry, graphs, analytic geometry, waveform analysis and decibel calculations. Calculations necessary for DC theory and continued study of electronics.

ELT 109 3 Credits As Demand Warrants
Arithmetic for AC Circuits (3+0)
Selected topics in algebra, trigonometry, graphs analytic geometry, waveform analysis and decibel calculations. Calculations necessary for AC theory and continued study of electronics.

ELT 111 1-3 Credits As Demand Warrants
Amateur Radio Licensing
This course provides an overview of amateur radio. Specific code and radio theory will be provided for the Novice and General Amateur License Examination. For those already licensed, there will be opportunities in the areas of community emergency communications, net operations, repeaters, use in the public classroom, etc.

ELT 122 3 Credits As Demand Warrants
Introduction to Electronic Devices (3+0)
Fundamentals of vacuum tubes and transistors. Emphasis on types of construction, interpretation of design parameters and applicability to electronic circuits.

ELT 123 3 Credits As Demand Warrants
Electronic Circuit Fundamentals (3+0)
An Analysis of basic electronic circuits. Power supplies, amplifiers, and oscillators. Operational and failure analysis of basic circuits with troubleshooting procedures for each type.

ELT 171 3 Credits As Demand Warrants
National Electric Code Study (3+0)
Systematic study of the National Electric Code and the rules governing the minimum requirements for the installation of electrical services, feeders and branch circuits and the requirements for the construction and installation of electrical equipment.

Emergency Medical Technology

EMTT 103 3 Credits As Demand Warrants
EMT: Emergency Trauma Training First Responder (3+0)
Provide training in emergency medical care for those who are apt to be the first person responding to an accident. Upon successful completion of the program, the student will be proficient not only in providing basic emergency medical care to victims of emergencies, but also in taking any actions necessary to minimize patient suffering and prevent further injury. Materials fee: $10.00.

EMTT 110 1 Credit As Demand Warrants
EMT: Cardiopulmonary Resuscitation (1+0)
This course is based on the Basic Life Support course offered by the American Heart Association. This course is recommended for anyone interested in knowing what to do in case of an emergency involving the interference with breathing and/or heart function

EMTT 119 4 Credits As Demand Warrants
EMT: Emergency Medical Technician I (4+0)
Designed to train professional emergency care providers in techniques to administer life-saving first aid and run an ambulance. Upon the successful completion of this course, the student will meet the Alaska requirements for certification as an Emergency Medical Technician. Materials fee: $115.00.

EMTT 120 4 Credits As Demand Warrants
EMT: Emergency Medical Technician - Ambulance (4+0)
120 hours of didactic and practical skills training, to provide competency in the life saving skills of an Emergency Medical Technician-Ambulance including basic patient assessment, advanced shock management, trauma management, CPR, extrication and immobilization techniques. Similar to Emtt. 119- but emphasizing ambulance techniques.

EMTT 121 2 Credits As Demand Warrants
EMT: Emergency Medical Technician II (2+0)
Designed to improve the skills of basic EMTs in the area of trauma intervention to help decrease the possibility of mortality and morbidity for the seriously injured patient by acquainting the student with advanced techniques in fluid therapy. The use of MAST pants, utilization of specific drug therapy and advanced airway care. Materials fee: $85.00.

EMTT 124 1 Credits As Demand Warrants
EMT: Emergency Medical Technician- Refresher (1+0)
This course will assist the EMT in maintaining the basic skills and knowledge of emergency medical procedures at the Basic EMT level; update EMT's on emergency medical care procedural changes; introduce them to newly developed equipment and train them in its use, and expose them to changes in State licensure or other medico-legal requirements.

EMTT 247 A, B 2 Credits As Demand Warrants
Arctic Survival (1+2)
Study and acquisition of basic survival skills and techniques needed in northern latitudes. Prepares students to face survival situations in an arctic environment and enables them to maintain equipment, skills, and attitudes in a state of readiness. Includes 1 credit in lecture, 1 in practicum - students must take lecture portion to be eligible for practicum.

Engineering and Science Management

ESM 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.

ESM 450 3 Credits Spring
Economic Analysis and Operations (3+0)
Fundamentals of engineering economy, project scheduling, estimating, legal principles, professional ethics, and human relations. (Not offered for credit toward the Master of Science in Engineering Management or Science Management. Prerequisites: ES 201 and senior standing in engineering or permission of instructor.)

ESM 601 3 Credits Fall
Engineers in Organizations (3+0)

ESM 605 3 Credits Fall
Engineering Economy (3+0)

ESM 608 3 Credits Fall
Legal Principles for Engineering Management (3+0)

ESM 609 3 Credits Alternate Fall
Project Management (3+0)

ESM 620 3 Credits Every Third Semester
Statistics for ESM (3+0)

ESM 621 3 Credits Spring
Operations Research (3+0)

ESM 623 3 Credits Fall and Spring
Computer Programming for Engineering Managers (3+0)

ESM 684 3 Credits Spring and Fall
Engineering Management Project (3+0)

***Undergraduate engineering students who are taking graduate ESM courses as technical electives should have completed or be concurrently enrolled in ESM 450.**

Engineering Science

ES 101 2 Credits Fall and Spring
Descriptive Geometry for Engineers (1 1/2+4)
Orthographic, isometric, oblique and perspective drawing, descriptive geometry, graphic solutions, computer graphics and computer aided drawing (CAD). Laboratory fee: $25.00. (Corequisite: MATH 107).

ES 201 3 Credits Fall and Spring
Computer Techniques (2+3)
Basic computer programming, in both FORTRAN and BASIC, with considerable applications from all fields of engineering. Laboratory fee: $10.00. (Prerequisite: MATH 107-108 or enrollment in MATH 200.)

ES 208 4 Credits Spring
Mechanics (3+3)
A standard engineering-oriented coverage of statics and dynamics. Vector methods are used where appropriate. (Prerequisites: MATH 201 and PHYS 211.)

ES 209 3 Credits Fall and Spring
Statics (3+0)
Study of force systems in two and three dimensions. Composition and resolution of forces and force systems; principles of equilibrium applied to various bodies, simple structures, friction, centroids, moments of inertia. Vector algebra used where appropriate. (Prerequisite: MATH 201; Corequisite: PHYS 211.)

ES 210 3 Credits Fall and Spring
Dynamics (3+0)
Study of the motion of particles, kinematics and kinetics of plane motion of rigid bodies, and principles of work and energy, impulse and momentum. Vector methods used where appropriate. (Prerequisite: ES 209.)

ES 301 3 Credits Fall
Engineering Analysis (3+0)
Application of mathematical tools to engineering with emphasis on the mathematical formulation of typical engineering problems. Selected topics from all fields of engineering. (Prerequisites: MATH 302, ES 210.)

ES 307 3 Credits Fall
Elements of Electrical Engineering (2+3)
Electrical fundamentals: elementary circuits and theorems, natural, forced and steady state response, principles of electronics, circuit models and system parameters, and characteristics of AC and DC machines. Laboratory fee: $25.00. (Prerequisite: MATH 202 or permission of the instructor.)

ES 308 3 Credits Spring
Instrumentation and Measurement (2+3)
Instrumentation theory and concepts of digital and analog devices, transducers, data sensing transmission, recording, and display, instrumentation system, remote sensing, and hostile environmental conditions. Laboratory fee: $25.00. (Prerequisite: ES 307.)

ES 331 3 Credits Fall and Spring
Mechanics of Materials (2+3)
Analysis of internal forces in members subjected to axial, torsional, and flexural loads, singly and in combination. Stress-strain relationships and material property definitions; shear and moment diagrams, Mohr's Circle. Applications include beams, columns, connections, indeterminate cases. (Prerequisites: ES 208 or ES 209 and MATH 201.)

ES 334 3 Credits Fall
Elements of Material Science/Engineering (2+3)
Introduction to properties of engineering materials, crystal structure, defect structure, structure and properties, aspects of metal processing, heat treatment, joining, testing, and failure analysis for engineering applications and design. (Prerequisites: CHEM 106 and PHYS 212.)

ES 341 4 Credits Fall and Spring
Fluid Mechanics (3+3)
Statics and dynamics of fluids; energy and momentum principles, dimensional analysis; flow in open channels, closed conduits and around submerged bodies. Laboratory fee: $10.00. (Prerequisites: MATH 201 and ES 208 or ES 210.)

ES 346 3 Credits Fall and Spring
Basic Thermodynamics (3+0)
Systems, properties, processes, and cycles. Fundamental principles of thermodynamics (first and second laws), and elementary applications. (Prerequisites: MATH 201 and PHYS 211.)

ES 429 3 Credits Fall
Ethics and Liability in Professional Practice (2+3)
The professional, moral, ethical, and legal responsibilities of a professional in today's society and workplace. (Prerequisite: Senior or graduate standing or consent of instructor.)

English

The written communication requirement for any baccalaureate degree is the successful completion of ENGL 111 and ENGL 211 or 213 or equivalent.

A student may elect to fulfill one half of the composition requirement by completing credit by examination in one of the required English courses. Permission of the Director of Communications in the English Department is required to begin all challenge procedures.

Students with extensive backgrounds in literature and composition or with outstanding test scores on nationally recognized examinations (an ACT score of 26 or higher, for example) may challenge both ENGL 111 and 211 or 213. Normally students will be required to complete a successful challenge of ENGL 111 before taking or challenging ENGL 211 or 213.

Required composition courses may also be taken through the University of Alaska Fairbanks Correspondence Study department.

DEVE 060 3 Credits As Demand Warrants
Elementary Composition (3+0)
Intensive work in the process of writing and revising to improve one's writing skills. Placement by examination.

DEVE 068 1-3 Credits As Demand Warrants
English Skills Laboratory (0+3+9)
The open entry/open exit lab block is designed to provide students with individualized instruction in areas where language skills building is needed. The lab is composed of three modules (spelling/vocabulary, writing and grammar/usage) into which a student might be advised based upon diagnosed need or student desire to improve skills in a particular area. It is not necessary for a student to enroll in all three modules. These modules may be taken for elective credit only, may not be used to fulfill written communication or humanities degree requirements, and may be repeated as necessary.

DEVE 070 3 Credits As Demand Warrants
Preparation for College English (3+0)
Intensive practice in a variety of language skills to prepare students for Engl. 111.

ENGL 104 3 Credits As Demand Warrants
Institute on Language & Thought (3+0)
An intensive Institute for developing critical thinking, writing, and reading skills using the Bard College model. the Institute establishes and nurtures learning communities which support bold thinking, risk-taking, collaboration, and independence. Offered only at the Kuskokwim Campus.

ENGL 111 3 Credits Fall and Spring
Methods of Written Communication (3+0) w
Instruction in writing expository prose, including generating topics as part of the writing process. Practice in developing, organizing, revising, and editing essays. (Prerequisite: Placement examination or ENGL 070.)

ENGL 190H 3 Credits Fall
Honors English Composition (3+0)
Extensive readings in a variety of disciplines. Frequent writing assignments addressing a wide rage of topics for specific purposes and audiences. Emphasis upon writing as a tool for learning across the curriculum. (prerequisites: Admission to the Honors Program or recommendations of instructor.)

ENGL 211 3 Credits Fall and Spring
Intermediate Exposition, with Modes of Literature (3+0) w
Instruction in writing through close analysis of literature. Research paper required. (Prerequisites: Sophomore standing and completion of ENGL 111 or its equivalent.)

ENGL 212 3 Credits As Demand Warrants
Business, Grant, and Report Writing (3+0)
This course will cover forms and techniques of business, grant, and report writing. (It may put special emphasis on one or another of these topics in a given semester.) It will not fulfill the second half of the baccalaureate requirements in written communication. (Prerequisite: ENGL 111.)

ENGL 213 3 Credits Fall and Spring
Intermediate Exposition (3+0) w
Instruction in writing through close analysis of expository prose from the social and natural sciences. Research paper required. (Prerequisites: Sophomore standing and completion of ENGL 111 or its equivalent.)

NOTE: Neither ENGL 211 nor ENGL 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 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 215 3 Credits Fall
Introduction to Poetry (3+0) h
Analysis and appreciation of the various kinds of writing in verse (lyric, narrative, and other poetry), including the terminology used to describe poetic techniques. (Prerequisite: ENGL 111 or permission of instructor.)

ENGL 216 3 Credits Fall and Spring
Introduction to Fiction (3+0) h
Analysis and appreciation of selected novels and short stories, including the terminology used to describe fictional techniques. (Prerequisite: ENGL 111 or permission of instructor.)

ENGL 218 3 Credits Spring
Themes in Literature (3+0) h.
Exploration of literary themes in various genres of literature, including fiction, poetry and drama. Such themes as 'Women in Literature,' 'Literature of the North,' and 'Detective Stories in Literature and Film' may be offered. Specific content to be announced at time of registration. Course maybe repeated for credit when content varies. (Prerequisite: ENGL 111 or permission of instructor.)

ENGL 230 3-7 Credits Fall

ENGL 231 3-7 Credits Spring
English Language Proficiency (3+Var.)
Intensive listening, speaking, reading, and writing in English. Especially recommended for all students for whom English is a foreign language. These courses do not meet general degree requirements in written communications and are not classified as humanities. (Prerequisite: Open only to students for whom English is a foreign language. Permission of instructor required.)

ENGL 271 3 Credits Fall and Spring
Introduction to Creative Writing-Fiction (3+0) h
A study of the forms and techniques of fiction for beginning students; discussion of students' work in class and in individual conferences. (Prerequisite: ENGL 111 or permission of instructor.)

ENGL 272 3 Credits Spring
Introduction to Creative Writing-Poetry (3+0)h
A study of the forms and techniques of poetry for beginning students; discussion of students' work in class and in individual conferences. (Prerequisite: ENGL 111 or permission of instructor.)

ENGL 290H 2 Credits Fall
Summer Reading Program (Honors) (2+0)
A summer reading course of selected readings in a variety of disciplines. Group discussions and written responses to the readings follow in the fall. Students are required to keep a summer journal. The course may be repeated for credit. (Prerequisite: ENGL 111 or enrollment in the Honors Program.)

ENGL 301 3 Credits Fall
Continental Literature in Translation: From the Ancient World through the Renaissance (3+0) h
Readings in Greek plays, *The Iliad*, *The Aeneid*, Bible, Dante: the classical background out of which the western literary tradition has sprung. (Prerequisite: ENGL 111 or permission of instructor.)

ENGL 306 3 Credits Spring
Survey of American Literature (3+0) h
Comprehensive study of American thought as reflected in its major writers, including works representative of American Calvinism, Rationalism, Transcendentalism, Romanticism, Realism, Naturalism, and Modernism. (Prerequisite: ENGL 111 or permission of instructor.)

ENGL 308 3 Credits Fall
Survey of British Literature: Beowulf to the Romantic Period (3+0) h
Survey of writers and works in Old and Middle English, including Chaucer, through the Elizabethan period (Shakespeare), the Restoration, and the Neoclassic Period of the 18th Century. (Prerequisite: ENGL 111 or permission of instructor.)

ENGL 309 3 Credits Spring
Survey of British Literature: Romantic Period to the Present (3+0) h
Survey of writers and works from the early Romantic Period (Blake and Burns), through the Victorian period, James Joyce, and Stream-of-Consciousness, to the present. (Prerequisite: ENGL 111 or permission of instructor.)

ENGL 310 3 Credits Spring
Literary Criticism (3+0) h
Introduction to the history and principles of literary criticism, from the earliest days to the end of the 19th century. (Prerequisite: ENGL 111 or permission of instructor.)

ENGL 313 3 Credits Spring
Writing Non-Fiction Prose (3+0)h
Instruction in writing for students who wish to develop proficiency in organizing and composing essays on factual material in which they have genuine interest. Readings and research paper required. (Prerequisites: Junior standing, ENGL 211 or 213 or permission of instructor.) Course does not fulfill the second half of the general degree requirement in written communication.

ENGL 314 3 Credits Fall and Spring
Technical Writing (2+0+1)h
Instruction in writing job applications with resumes, as well as letters of inquiry, complaint, and evaluation. Practice in preparing tables, graphs, process descriptions, technical instructions, abstracts, grant proposals. Practice in writing technical reports, such as progress, laboratory, survey, incident, inspection, feasibility, and research reports. (Prerequisites: Junior standing and ENGL 211 or 213 or permission of instructor). Course does not fulfill the second half of the general degree requirement in written communication.

ENGL 318 3 Credits Fall and Spring
Modern English Grammar (3+0) h
Study of the structure of current English as seen through traditional and contemporary grammatical theories. (Prerequisite: English 111 or permission of instructor.)

ENGL 340 3 Credits Fall and Spring
Contemporary Native American Literature (3+0)h (Same as ANS 340)
An exploration of contemporary Native American writing in English, including novels, short stories, poetry, and plays. Some examples of Native American film will also be introduced when related to a writing. Works discussed in relation to cultural contexts and interpretations. (Prerequisite: ENGL 111 or permission of instructor.)

ENGL 349 3 Credits Fall
Narrative Art of Alaska Native Peoples (in English Translation) (3+0) h
(Same as ANS 349) Survey of traditional and historical tales by Aleut, Eskimo, Athabaskan, Eyak, Tlingit, Haida, and Tsimshian storytellers. Attention to bibliography, Alaska Native genres and viewpoints, and structural and thematic features of tales. (Prerequisite: ENGL 111 or permission of instructor.)

ENGL 350 3 Credits Alternate Fall
Literature of Alaska and the Yukon Territory (3+0) h
Study of representative works of fiction, verse, and non-fiction which deal with Alaska and the Yukon Territory. (Prerequisite: ENGL 111 or permission of instructor. Next offered: 1989-90.)

ENGL 371 3 Credits Fall and Spring
Intermediate Creative Writing (3+0) h
Practice and guidance in writing fiction, poetry, drama, and essays. Students' work will be read and discussed in class and in conference with the instructor. Close study of the techniques of established writers. (Prerequisite: ENGL 271 or ENGL 272 or permission of instructor.)

ENGL 403 3 Credits Every Third Spring
American Renaissance (3+0) h
Study of American Literature of the mid-nineteenth century: Poe through Whitman. (Prerequisite: ENGL 111 or permission of instructor. Next offered: 1989-90.)

ENGL 404 3 Credits Every Third Spring
American Realism (3+0) h
Study of American literature from the Civil War to World War I: Twain through James. (Prerequisite: ENGL 111 or permission of instructor. ENGL 307 desirable but not required. Next offered: 1990-91.)

ENGL 405 3 Credits Every Third Fall
British Writers of the 19th Century: Romantic Period (3+0) h
Study of English literary romanticism including authors such as Byron, Keats, Shelley, Coleridge, Wordsworth, Austen, the Bronte sisters, and Scott. (Prerequisite: ENGL 111 or permission of instructor. ENGL 308 desirable but not required. Next offered: 1990-91.)

ENGL 406 3 Credits Every Third Fall
British Writers of the 19th Century: Victorian Period (3+0) h
Study of the impact of industrialization, social reformation, religious controversy, and philosophical attitudes on literature. Authors to include (but not limited to): Browning, Tennyson, Thackeray, Eliot, Arnold, Dickens, Hazlitt, Ruskin, and Meredith. (Prerequisite: ENGL 111 or permission of instructor. ENGL 309 desirable but not required. Next offered: 1990-91.)

ENGL 407 3 Credits Every Third Fall
British Writers of the Restoration and 18th Century: Neo-Classical Period (3+0) h
Study of new developments in drama, verse, and prose reflecting new forces in government, religion, and society during the Augustan Age. Attention to the mode of satire and to the fashion of sentimentalism in all genres. Authors to include (but not limited to): Dryden, Defoe, Addison, Steele, Swift, Pope, Johnson, Boswell, Goldsmith, and Sheridan. (Prerequisites: ENGL 111 and junior standing or permission of instructor. ENGL 308 recommended. Next offered: 1989-90.)

ENGL 408 3 Credits Every Third Spring
American Origins. (3+0) h
Study of the writers who contributed to the development of a national literary identity: Bradstreet through Cooper. (Prerequisites: ENGL 111 and junior standing or permission of instructor. ENGL 307 recommended but not required. Next offered: 1990-91.)

ENGL 414 3 Credits Fall
Research Writing (3+0) h
Practice in reporting primary and secondary research in the forms and styles appropriate to the student's field. Preference given to seniors. (Prerequisite: ENGL 111 and 211 or 213 or their equivalent.)

ENGL 421 3 Credits Every Third Spring
Chaucer (3+0) h
Major poetry, with emphasis on *The Canterbury Tales*, and survey of Chaucerian criticism. (Prerequisite: ENGL 111 or permission of instructor; ENGL 308 desirable but not required. Next offered: 1989-90.)

ENGL 422 3 Credits Fall
Shakespeare: History Plays and Tragedies (3+0) h
Major chronicle plays and tragedies, including significant criticism. (Prerequisite: ENGL 111 or permission of instructor. ENGL 308 desirable but not required.)

ENGL 425 3 Credits Spring
Shakespeare: Comedies and Non-Dramatic Poetry (3+0) h
Major comedies and non-dramatic poems, including significant criticism. (Prerequisite: ENGL 111 or permission of instructor. ENGL 308 desirable but not required.)

ENGL 426 3 Credits Every Third Fall
Milton (3+0) h
Major poetry and prose, and survey of Miltonian criticism. (Prerequisite: ENGL 111 or permission of instructor; ENGL 308 desirable but not required. Next offered: 1990-91.)

ENGL 444 3 Credits Every Third Spring
Fiction in Translation (3+0) h
Major fiction in English translation. (Prerequisite: ENGL 111 or permission of instructor. Next offered: 1990-91.)

ENGL 445 3 Credits Alternate Fall
20th-Century Drama: From Chekhov to Ionesco (3+0) h
The major dramatists and their achievements. (Prerequisite: ENGL 111 or permission of instructor. Next offered: 1989-90.)

ENGL 446 3 Credits Alternate Spring
Major Modern and Contemporary Poetry (3+0) h
Yeats to the present. (Prerequisite: ENGL 111 or permission of instructor. Next offered: 1989-90.)

ENGL 447 3 Credits Alternate Spring
20th-Century British Prose (3+0) h
Study of fiction and nonfiction prose, modern and contemporary. (Prerequisite: ENGL 111 or permission of instructor. Next offered: 1989-90.)

ENGL 448 3 Credits Alternate Spring
20th-Century American Prose (3+0) h
Study of fiction and nonfiction prose, modern and contemporary. (Prerequisite: ENGL 111 or permission of instructor. Next offered: 1989-90.)

ENGL 452 3 Credits Every Third Fall
The British Novel to 1900 (3+0) h
Origin and development of the novel with concentration on significant novelists from Daniel Defoe to Thomas Hardy. (Prerequisite: ENGL 111 or permission of instructor. Next offered: 1990-91.)

ENGL 462 3 Credits Alternate Spring
Applied English Linguistics (3+0) h
The topic(s) for each offering of the course will be announced. Examples are teaching English as a second language, dialects and education, dictionaries, stylistics, and composition. (Prerequisite: ENGL 111 or permission of instructor. Next offered: 1989-90.)

ENGL 471 3 Credits Fall and Spring
Undergraduate Writers' Workshop (3+0)h
Discussion of craft and techniques and student work intended for advanced students who will prepare a brief, finished manuscript as a final project. May be repeated one time for credit. (Prerequisites: ENGL 371 or permission of instructor.)

ENGL 472 3 Credits Alternate Spring
History of the English Language (3+0) h
Origin and development of the English language from prehistoric times to the present. (Prerequisite: ENGL 111 or permission of instructor. ENGL 318 or a linguistics course is desirable, but not required. Next offered: 1989-90.)

ENGL 485 3 Credits Spring
Teaching Composition in the Schools (3+0)
Theoretical background and workshop experience for teaching composition in middle and high schools with current pedagogy on teaching of writing stressed. A variety of teaching methods will be demonstrated and discussed. Writing, teaching demonstrations, reports, group and class discussions are required. (Prerequisites: Completion of university composition requirement with grade of B or higher, or permission of instructor.)

ENGL 601 3 Credits Spring
Bibliography, Methods, and Criticism (3+0)

ENGL 603 3 Credits As Demand Warrants
Studies in British Literature: Old and Middle English (3+0)

ENGL 604 3 Credits Every Third Fall
Studies in British Literature: Renaissance and 17th Century (3+0)

ENGL 607 3 Credits Every Third Spring
Studies in British Literature: Restoration, 18th and 19th Centuries (3+0)

ENGL 608 3 Credits Every Third Spring
Studies in British Literature: 20th Century (3+0)

gENGL 609 3 Credits Every Third Spring
Studies in American Literature: Colonial Period and 19th Century (3+0)

ENGL 612 3 Credits Every Third Fall
Studies in American Literature: 20th Century (3+0)

ENGL 651 3 Credits Alternate Spring
Internship in Publishing (3+1)

ENGL 671 Credits Arr. Fall and Spring
Writers' Workshop

ENGL 673 3 Credits Fall
Professional Writing Workshop (3+0)

ENGL 681 3 Credits Alternate Fall
Forms of Poetry (3+0)

ENGL 682 3 Credits Alternate Fall
Forms of Fiction (3+0)

ENGL 683 3 Credits As Demand Warrants
Forms of Drama (3+0)

ENGL 684 3 Credits Alternate Spring
Forms of Non-Fiction Prose (3+0)

ENGL 685 3 Credits Fall
Teaching College Composition (3+0)

ENGL 687 3 Credits Alternate Spring
Writing Professional Prose (3+0)

ENGL 688 3 Credits Alternate Spring
Audiovisual Script Writing (3+0)

ENGL 689 3 Credits Alternate Fall
Editing Prose (3+0)

ENGL 692 Credits Arr. Fall and Spring
Graduate Seminar

English as a Second Language

ESLG 051 1-3 Credits As Demand Warrants
Speaking English as a Second Language
For students who do not speak English as their first language, but who can understand and follow simple instructions in English, this class provides ample opportunity to engage in English conversation. The emphasis is on large quantities of comprehensible English, and building student confidence in understanding and speaking it. May be repeated up to nine credits.

ESLG 061 1-3 Credits As Demand Warrants
Reading English as a Second Language
For students whose first language is not English, this class provides and opportunity to develop the skills involved in reading simple passages in English. language experience approach and other methods are used to increase students' abilities and to build their confidence in reading English as it is encountered everyday. May be repeated up to nine credits

ESLG 071 1-3 Credits As Demand Warrants
Writing English as a Second Language
For students whose first language is not English, this class provides an opportunity to develop skills at writing simple English compositions. The emphasis is on writing large quantities of English which is understandable to native English speakers, and on building students' confidence in communicating through written English. May be repeated up to nine credits.

Environmental Quality Engineering/ Science

EQS 201 3 Credits Spring
Environmental Management (3+0) s
The study of social processes affecting the environment including law, environmental assessment, social/economic constraints, political processes and society's influence on environmental values. Topics include NEPA, energy sources and impacts, population control, resource development, conservation and preservation, acid rain, greenhouse effect, deforestation, pollution and hazardous waste abatement and treatment strategies. Case studies are used and the course is integrated with and complements ALR 101.

EQE 641 3 Credits Every Fifth Semester
Environmental Quality Science Measurements (2+3)

EQE 643 4 Credits Fall
VLSI in Computer System Design (3+0)

EQE 644 3 Credits Every Fifth Semester
Environmental Quality Evaluation (3+0)

EQE 645 3 Credits Every Third Semester
Unit Processes - Chemical and Physical (3+0)

EQE 646 3 Credits Every Fifth Semester
Unit Processes — Biological (3+0)

EQE 647 3 Credits Every Fifth Semester
Biotechnolgy (3+0)
(Same as ALR 607)

EQE 648 3 Credits **Every Fifth Semester**
Solid Waste Management (3+0)

EQE 649 3 Credits **Every Fifth Semester**
Hazardous and Toxic Waste Management (3+0)

Eskimo

ESK 101 5 Credits **Fall**
ESK 102 5 Credits **Spring**
Elementary Yup'ik Eskimo (5+0) h
Introduction to Central Yup'ik, the language of the Yukon and Kuskokwim deltas and Bristol Bay. Open to both speakers and nonspeakers. For speakers the course provides literacy and grammatical analysis. For others, it provides a framework for learning to speak, read, and write the language. Consideration given to dialect differences.

ESK 103 3 Credits **As Demand Warrants**
Yup'ik Made Easy (3+0)
This is an entry-level course for those wishing to learn the Yup'ik language. The very popular and highly successful TPR (Total Physical Response) methods, through commands and actions is used. The study of grammar, reading and writing will not be covered in this course. The focus will be on teaching comprehension of the language in everyday situations, with speech being delayed until the student is ready.

ESK 104 3 Credits **As Demand Warrants**
Yup'ik Made Easy II (3+0)
This is a continuation of ESK 103 for those wishing to learn the Yup'ik language. The very popular and highly successful TPR (Total Physical Response) method, whereby students learn to comprehend the language through commands and actions, is used. Reading and writing will only be covered indirectly in this course. The focus will be on teaching comprehension of the language in everyday situations. Vocabulary from ESK 103 will be briefly reviewed.

ESK 105 1-3 Credits **As Demand Warrants**
ESK 106 1-3 Credits **As Demand Warrants**
Conversational Central Yupik (1+3)
These are introductory courses for students who wish to acquire the ability to speak Central Yupik, the language of Norton Sound, the lower Yukon and Kuskokwim Rivers and the Delta, and Bristol Bay. Students first learn to understand simple spoken language, then to speak simple Central Yupik, developing a beginning level of communicative competence in the language. (Prerequisite: ESK 105 for 106.)

ESK 108 3 Credits **Spring**
Yupik Literacy (3+8)
Literacy training for speakers of Yupik languages (Central Yupik, St. Lawrence Island Yup'ik, and Alutiiq). Learning to read and write the language.

ESK 109 3 Credits **As Demand Warrants**
Yup'ik Orthography (3+0)
Yup'ik orthography is an entry level-class designed for those how are fluent in Central Yup'ik. The course will cover reading, silent and oral, and writing, emphasizing specific skills and practical application of those skills through writing assignments. Dialect differences in the Central Yup'ik region will be used to demonstrate standardization of the writing systems. (Prerequisite: demonstrated conversational Yup'ik skills).

ESK 111 5 Credits **Fall**
ESK 112 5 Credits **Spring**
Elementary Inupiaq Eskimo (5+0) h
Introduction to Inupiaq, the language of Unalakleet, Seward Peninsula, Kotzebue Sound, and North Slope. Open to both speakers and nonspeakers. For speakers the course provides literacy and grammatical analysis. For others it provides a framework for learning to speak, read, and write the language. Consideration given to dialect differences.

ESK 115 1-3 Credits **As Demand Warrants**
ESK 116 1-3 Credits **As Demand Warrants**
Conversational Inupiaq (1+3)
These are introductory for students who wish to acquire the ability to speak Inupiaq, the language of Norton Sound, the Seward Peninsula, Kotzebue Sound, the North Slope, and the arctic portions of Canada and Greenland. Students first learn to understand simple spoken language, then to speak simple Inupiaq, developing a beginning level of communicative competence in the language. (Prerequisite: ESK 115 for 116.)

ESK 118 3 Credits **Spring**
Inupiaq Literacy (3+0)
Literacy training for speakers of Alaskan Inupiaq. Learning to read and write the language.

ESK 130 3 Credits **As Demand Warrants**
Beginning Yup'ik Grammar (3+0)
Literacy and grammatical analysis of the Central Yup'ik language are introduced in this course. Both Yup'ik speakers and nonspeakers are eligible since the framework for learning to speak and write the language is offered. Considerations are give to dialect differences. (Prerequisite: ESK 103 or basic conversational Yup'ik skills).

ESK 155 1-3 Credits **As Demand Warrants**
ESK 156 1-3 Credits **As Demand Warrants**
Conversational Siberian Yupik (1+3)
These are introductory courses for students who wish to acquire the ability to speak in Siberia Yupik, the language of St. Lawrence Island and parts of the Chukchi Peninsula in Siberia. Students first learn to understand simple spoken language, then to speak simple Siberian Yupik, developing a beginning level of communicative competence in the language.

ESK 158 1-3 Credits **As Demand Warrants**
Siberian Yupik Orthography (1+3)
This course provides students with an introduction to the standard writing system (orthography) of Siberian Yupik. Students learn the skills of spelling, reading, and writing words in Siberian Yupik, which are the fundamentals of basic literacy. (Prerequisite: ability to speak Siberian Yupik or permission of the instructor.)

ESK 201 3 Credits **Fall**
ESK 202 3 Credits **Spring**
Intermediate Yup'ik (3+0) h
Continuation of ESK 101-102. Increasing emphasis on speaking, reading, and writing.

ESK 203 3 Credits **As Demand Warrants**
Yupik Made Easy III (3+0) h
A continuation of Yup'ik Made Easy I and II using TPR (total physical response), where students learn to comprehend the language through commands and actions. Reading and writing will be covered only indirectly, as the focus will be on teaching comprehension and speech in everyday situations. Vocabulary from previous classes will be briefly reviewed. (Prerequisite: ESK 104 or instructor permission.)

ESK 208 3 Credits **As Demand Warrants**
Yup'ik Composition (3+0)
In this course students examine the development of written Yup'ik and explore writing for entertainment, information, transcription of oral narratives and note taking in meetings where Yup'ik is the dominant language. This course will be open to new writing styles, rather than simply translating the standard categories of English composition. Students will receive extensive practice in Yup'ik orthography and participate in the evaluation of each other's writings. (Prerequisite: ESK 108)

ESK 211 3 Credits **Fall**
ESK 212 3 Credits **Spring**
Intermediate Inupiaq Eskimo (3+0) h
Continuation of Eskimo 111-112, concentrating on development of conversational ability, with presentation of additional grammar and vocabulary.

ESK 218 3 Credits **As Demand Warrants**
Inupiaq Composition (3+0)
Students will examine the development of written inupiaq and explore the many possible uses of Inupiaq writing, to entertain, inform, persuade, transcribe oral narratives and take notes on such occasions as city council meetings. The course will be open to new genres, rather than simply translating the standard categories of English composition. Students will receive extensive practice in the Inupiaq orthography and will actively participate in the evaluation of each other's writing (Prerequisite: ESK 118 or equivalent.)

ESK 301 3 Credits **Fall**
Advanced Yup'ik Eskimo (3+0) h
Continuation of ESK 201-202. Completes the basic study of the Yup'ik grammar. (Prerequisites: ESK 101, 102, 201-202 or permission of instructor.)

ESK 415 3 Credits **Spring**
Additional Topics in Advanced Yup'ik Eskimo (3+0) h
Further study of Yup'ik linguistics. Includes text transcription, editing, analysis, and discussion. Yup'ik dialectology. Study of related Eskimo languages from the standpoint of Central Yup'ik. Additional topics to be studied depending upon the interests of the students and the instructor. (Prerequisites: ESK 101, 102, 201-202 or permission of instructor.)

ESK 417 3 Credits **Spring**
Advanced Inupiaq Eskimo (3+0) h
Advanced study in Inupiaq Eskimo. A continuation of Esk. 212. (Prerequisites: Completion of ESK 111, 112, 211, 212 or permission of instructor.)

Fire Science

FSCI 101 3 Credits As Demand Warrants
Introduction to Fire Science (3+0)
An introduction to Fire Science and Fire Protection; career opportunities in fire protection and related fields; history of fire protection; fire loss analysis; public, qusai-public and private fire protection services; specific fire protection functions; fire chemistry and physics.

FSCI 105 3 Credits As Demand Warrants
Fundamentals of Fire Prevention (3+0)
Organization and function of fire prevention; inspections; surveying and mapping procedures; recognition of fire and life hazards; engineering a solution of a fire hazard; enforcing the solution of a fire hazard; fire safety education.

FSCI 107 3 Credits As Demand Warrants
Fire Tactics and Strategy (3+0)
Principles of fire control through utilization of manpower, equipment and extinguishing agents. (Prerequisite FSCI 101 or equivalent or permission of instructor)

FSCI 111 3 Credits As Demand Warrants
Fire Company Organization & Management (3+0)
Review of fire department organization; planning, organizing and supervising to meet the needs of the fire department, with emphasis on the company officer's role.

FSCI 115 3 Credits As Demand Warrants
Fire Apparatus and Equipment (3+0)
Fire apparatus design, specifications and performance capabilities, effective utilization of apparatus in fire emergencies

FSCI 117 3 Credits As Demand Warrants
Rescue Practices (3+0)
Rescue problems and techniques; emergency rescue equipment; toxic gases; chemicals and diseases; radiation hazards; card of the victims, including emergency childbirth, respiration and resuscitation, extrication, and other emergency conditions.

FSCI 121 3 Credits As Demand Warrants
Introduction to Fire Chemistry & Physics (3+0)
Introduction to nomenclatures, principles and procedures of chemistry as related to fire problems.

FSCI 123 3 Credits As Demand Warrants
Fire Investigation (3+0)
Determining cause of fires (accidental, suspicious and incendiary); types of fires; related laws; introduction to arson and incendiarism; recognizing and preserving evidence; interviewing witnesses and suspects; arrest and detention procedures; court procedures and giving court testimony.

FSCI 151 3 Credits As Demand Warrants
Wildland Fire Control I (3+0)
A course designed to provide the student with a fundamental knowledge of the factors affecting wildland fire prevention, fire behavior, and control techniques.

FSCI 153 3 Credits As Demand Warrants
Wildland Fire Organization and Management (3+0)
A review of fire organization, the steps involved in organizing for suppression, and a study of management functions.

FSCI 155 3 Credits As Demand Warrants
Fire Behavior I (3+0)
Course includes fire triangle, ignition temperatures, sources of heat, heat transfer, weather factors, forest fuel factors and topography, interplay of fuels and prediction of fire behavior on our wildland fires.

FSCI 156 3 Credits As Demand Warrants
Fire Planning Function (3+0)
A course designed to provide the student with an overview of the planning process, organizational relationships with other functions, use of planning matrix board, check-in and resource status procedures, evaluation, analysis and display of incident information, documentation, demobilization, use of technical specialist and components of an incident action plan.

FSCI 157 3 Credits As Demand Warrants
Aircraft Operations (3+0)
Use of aircraft for suppression of wildland fires and support of the service function-emphasis on air safety.

FSCI 158 3 Credits As Demand Warrants
Fire Operation Function (3+0)
A course designed to provide the student with an overview of the operation function including organization, implementation of the incident action plan, tactical use of resources, ordering additional resources, appointment of geographical and functional supervisors, support and operations of fixed wing and rotor aircraft.

FSCI 161 3 Credits As Demand Warrants
Fire Logistics Functions (3+0)
Contains basic organization and procedures of the support function. Includes study of the Service Chief position and its subordinate positions.

FSCI 162 3 Credits As Demand Warrants
Methods/Instruction For Fire Service Training (3+0)
A course designed to provide the student with the skills necessary to instruct fire service courses including adult education techniques, classroom setup, use of audio-visual equipment, presentation, and evaluation methods of students and instruction.

FSCI 163 3 Credits As Demand Warrants
Wildland Air Attack (3+0)
Proper use and management of aircraft as a took in fire support, specifically the use of helicopters and fixed wing tanker attack.

FSCI 202 3 Credits As Demand Warrants
Fire Hydraulics (3+0)
Review of applied mathematics; hydraulic laws as applied to fire service; applications of formulas and mental calculations; hydraulics and water supply problems.

FSCI 204 3 Credits As Demand Warrants
Hazardous Materials I (3+0)
An introduction to basic fire chemistry and physics. Problems of flammability as encountered by firefighters when dealing with fuels and oxidizers. Elementary fire fighting practices pertaining to hazardous materials in storage and transit.

FSCI 205 3 Credits As Demand Warrants
Hazardous Materials II (3+0)
A second semester course in Hazardous Materials coving handling, identification and fire fighting practices involving explosive, toxic, and radioactive materials in storage and transit. (Prerequisite FSCI 204 or instructor's permission)

FSCI 206 3 Credits As Demand Warrants
Building Construction/Fire Protection (3+0)
Fundamentals of building construction as it relates to fire protection. (Prerequisite: FSCI 101 or employment or experience in related field, such as Fire Protection, insurance, construction architecture, or engineering.

FSCI 208 3 Credits As Demand Warrants
Fire Service Records and Reporting (3+0)
A course designed for all members to the fire service in the use of typical records and report systems. Involves knowledge and understanding of fire department records systems, principles of report writing, applications in the area of pre-fire survey, post-fire reporting, research and planning.

FSCI 212 3 Credits As Demand Warrants
Codes and Ordinances (3+0)
Familiarization and interpretation of national, state and local codes, ordinances and laws which influence the field of fire prevention. (Prerequisites: FSCI 101 or permission of instructor.)

FSCI 214 3 Credits As Demand Warrants
Fire Protection Equipment and Systems (3+0)
A study of portable fire extinguishing equipment; protection systems for specific hazards; sprinkler systems; and fire detection and alarm systems.

FSCI 252 3 Credits As Demand Warrants
Wildland Fire Prevention/Law Enforcement (3+0)
The organization and functions of fire prevention; objectives and policy, education and enforcement, analysis and inspection techniques; public relations as affected by fire prevention; fire investigation; basic law enforcement techniques.

FSCI 254 3 Credits As Demand Warrants
Wildland Fire Business Management (3+0)
A course covering the duties and responsibilities of a fire officer as they relate to fire management practices and programs. Promotes professionalism and effects a sound fire management program. Covers procedures required in identified finance jobs in a wildland organization, including the financial management of a large complex wildland fire.

FSCI 256 3 Credits As Demand Warrants
Wildland Fire Plan/Multi Use Management (3+0)
Fire management and its role in a multiple use resource management program. Includes resource management, prescribed fire wildfire practices, environment, management goals and objectives, and fire planning.

FSCI 258 3 Credits As Demand Warrants
Prescribed Burning/Fuels Management (3+0)
Course analyzes different fuels and evaluates benefits and effect of management practices. Includes prescribed fire procedures and objectives.

FSCI 260 3 Credits As Demand Warrants
Fire Research & Development (3+0)
Research and development in the area of fire prevention, detection, prescribed burns, fire suppression, and post suppression.

FSCI 262 3 Credits As Demand Warrants
Wildland Fire Control II (3+0)
A course designed to provide the student with advanced management skills and techniques. Topics included are political and environmental considerations as they apply to wildland fires, line officer/incident management team roles and responsibilities, available technology and the problems involved with the wildland-urban interface.

FSCI 266 3 Credits As Demand Warrants
Wildland Fire Environment Considerations (3+0)
Course covers ecosystems, erosion, soil properties and revegetation, fire ecology, fuel and the environment, fire control practices, and smoke management.

FSCI 270 3 Credits As Demand Warrants
Incident Command Function (3+0)
A course designed to provide the student with an overview of the command function including use of single and unified command, roles and responsibilities of the incident commander and staff, development and implementation of strategic decision, providing information to the media, and managing the incident.

Fisheries

Fisheries courses are offered at both the Fairbanks Campus and at the UAF Juneau Center for Fisheries and Ocean Science. Those offered only at Fairbanks will be identified by the initial 'F' following the course number. Courses offered only at Juneau will be identified with a 'J' following the course number. The frequency of offering is identified by location for those courses offered at both units.

FISH 101J 3 Credits Fall
Introduction to Fisheries (3+0)
A survey of the values, habitats, biology, ecology and management of fishes with particular reference to Alaskan fisheries and issues.

FISH 201J 3 Credits Fall
Introduction to Seafood Science and Nutrition (3+0)
An introduction for sophomore-level natural sciences/environmental studies students to the application of scientific and engineering principles in the harvesting, processing, preservation and marketing of Alaska's rich fisheries resources. (Prerequisites: CHEM 105 or BIOL 105 or consent of intructor.)

FISH 301J 4 Credits Fall
Introduction to Ichthyology (3+2)
Major groups of fishes, emphasizing the fishes of northwestern North America. Classification, structure, evolution, general biology and importance to man of the major groups. (Prerequisite: BIOL 222 [J BIOL 209].)

FISH 381J 3 Credits Alternate Fall
Biology of Commercially Important Salmonid Fishes (3+0)
Biology, life history and ecology of economically valuable salmonids. Management of salmonid fisheries. (Prerequisite: FISH 301. Next offered: 1990-91.)

FISH 382J 4 Credits Alternate Spring
Biology of Commercially Important Marine Fishes (3+2)
Review of the major marine fish resources of Alaska. The taxonomy, distribution, life history and ecological relationships of marine fishes will be studied, with emphasis on demersal fishes, early life history and the effects of fisheries on stocks. (Prerequisite: BIOL 222 [J BIOL 209]. Next offered: 1990-91.)

FISH 383J 4 Credits Alternate Fall
Biology of Commercially Important Invertebrates (3+3)
Topics covered include the taxonomy, morphology, physiology and ecology of commercially important invertebrates. A history of the management and fishery of the major species will also be covered. Emphasis will be on Alaskan species. (Prerequisite: BIOL 222 [J BIOL 209]. Next offered: 1990-91.)

FISH 400 3 Credits Fairbanks, Fall
Fisheries Science (F 2+3, J 3+0) Juneau, Fall
The general biology of fishes in relation to their management. Methods of collecting, analyzing, and interpreting field and laboratory data. (Prerequisite: one 200-level biology class. Corequisite: STAT 301 [J STAT 373].)

FISH 401 3 Credits Fairbanks, Spring
Fisheries Management (3+0) Juneau, Alternate Spring
The principles, concepts and techniques of fisheries management are reviewed in terms of their biological, economic, social and political aspects. Topics covered are stocking and introductions, habitat manipulation, sustainable yield, regulation, management organizations and their responsibilities. To clarify concepts and practices, examples of several fisheries are used. (Prerequisite: BIOL 271. Next offered Juneau: 1990-91.)

FISH 411F Credits Arr As Demand Warrants
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.)

FISH 418J 4 Credits Alternate Fall
Renewable Resource Management Systems (4+)
Develops the abilities to recognize, process and apply critical information in the management of renewable resources by examples from Alaskan fisheries. The computer is explored as a primary tool of resource management. (Prerequisite: STAT 301 [J STAT 373]. STAT 401 recommended. Next offered: 1990-91.)

FISH 420J 3 Credits Fall
Modeling, Simulation and Ecological Theory (3+0)
Introduction to formal models (mathematical, graphical and simulation) in fisheries and ecology. Nature and uses of modeling approaches; choice of assumptions; simulation techniques and model verification; examples and case histories. (Prerequisites: MATH 200, BIOL 271 [J BIOL 281].)

FISH 421J 4 Credits Alternate Spring
Fisheries Population Dynamics (4+0)
Review and analysis of the major quantitative techniques available for assessing and predicting the status of fish populations. Demonstration and use of field and laboratory techniques and model verification; examples and case histories. (Prerequisite: STAT 301 [J STAT 373]. FISH 418 recommended. Next offered: 1990-91.)

FISH 436J 3 Credits Alternate Fall
Salmon Culture (1+4)
Biology and technology of artificial propagation of salmonids. Reproduction, embryology, growth, nutrition, genetics and pathology of salmonids in both extensive (sea ranching) and intensive rearing systems. Bioengineering of incubators, rearing containers, water diversion systems and other related topics. Laboratory exercises in measuring effects of environmental characteristics on development and growth of salmon. (Prerequisites: BIOL 222 [J BIOL 209], CHEM 106, FISH 381. Next offered: 1989-90.)

FISH 445J 3 Credits Alternate Spring
Sampling Methods in Fisheries (2+2)
A review of standard and specialized sampling techniques in aquatic habitats. Basic sampling theory and statistical considerations will be included, as will demonstrations and use of field laboratory techniques. Ship-board sampling will be part of the course. (Prerequisite: STAT 301 [J STAT 373]. Next offered: 1989-90.)

FISH 601F 3 Credits Alternate Fall
Quantitative Fishery Science (3+0)

FISH 606J 4 Credits As Demand Warrants
Finfish and Shellfish Diseases (3+3)

FISH 610J 3 Credits As Demand Warrants
Fish Physiology (3+0)

FISH 621J 4 Credits Alternate Fall
Advanced Fisheries Population Dynamics I (3+2)

FISH 622J 4 Credits Alternate Spring
Advanced Fisheries Population Dynamics II (3+2)

FISH 649J 3 Credits As Demand Warrants
Molecular Genetics (3+0)

FISH 651J 3 Credits As Demand Warrants
Fishery Genetics (3+0)

FISH 652J 3 Credits As Demand Warrants
Use of Electrophoresis in Fisheries (1+4)

FISH 676J 3 Credits As Demand Warrants
Fish Ecology (3+0)

Foreign Languages

FL 110 2 Credits As Demand Warrants
How to Pronounce French, German, Italian, and Spanish (2+0)
Designed to meet the needs of students and others in radio, television, journalism, drama, music (esp. voice), etc. who want to pronounce French, German, Italian and Spanish correctly and with confidence. The method is practical and direct. Concrete examples are used.

French

(For UAF program in France, see International Programs.)

FREN 075 3 Credits As Demand Warrants
FREN 076 3 Credits As Demand Warrants
Conversational French II (3+0)
An introductory course for students who wish to acquire the ability to speak French. Students first learn to understand simple spoken language, then to speak simple French, developing a beginning level of communicative competence in the language. (Prerequisite: FREN 075 for 076.

FREN 101 5 Credits Fall
FREN 102 5 Credits Spring
Elementary French I and II (5+0) h
Introduction to the language and culture: development of competence and performance in the language through understanding, recognition and use of linguistic structures, increasing emphasis on listening comprehension and speaking, basic vocabulary of approximately 1,000 words, exploration of the cultural dimension, implicitly through language, and explicitly through texts and audio-visual materials; use of Foreign Language Learning Center.

FREN 201 3 Credits Fall
FREN 202 3 Credits Spring
Intermediate French I and II (3+0) h
Continuation of Fren. 102. Increasing emphasis on reading ability and culture material. Conducted in French. (Prerequisite: FREN 102 or equivalent.)

FREN 288 2 Credits Spring
Individual Study: Reading French h
Emphasis on rapid expansion of passive vocabulary and immediate recognition of frequent idiomatic expressions and grammatical structures, development of true reading skills, modern literary and/or nonliterary texts. (Prerequisites: FREN 201, equivalent training or permission of instructor. Recommended to be taken concurrently with FREN 202.)

FREN 301 3 Credits Alternate Fall
FREN 303 3 Credits Alternate Fall
Advanced French (3+0) h
Discussions and essays on more difficult subjects or texts, and translations, stylistic exercises, and special grammatical problems. Conducted in French. (Prerequisite: FREN 202 or equivalent. FREN 301 next offered: 1989-90; FREN 303: 1990-91.)

FREN 387 2 Credits Alternate Fall
Individual Study: Semantics h
Systematic expansion of passive and active vocabulary through analysis of word fields, series of synonyms and antonyms, principles of word formation, derivation, composition, etc. Conducted in French. (Prerequisites: FREN 202 or permission of instructor. Next offered: 1989-90.)

FREN 432 3 Credits Spring
Studies in French Literature and Culture (3+0) h
Intensive study of authors, literary movements, periods, and/or genres. Analysis of cultural material other than texts. Conducted in French. Student may repeat course for credit when topics vary. (Prerequisites: French 301 or 303 or equivalent and at least sophomore standing, or permission of instructor.)

FREN 487 2 Credits Alternate Fall
Individual Study: Translation of French Texts h
Expansion of vocabulary and grammatical knowledge, emphasis on understanding precise shades of meaning, stylistics, artistic expression and cultural values in language, and literary and non-literary texts. Student may repeat course for credit if materials vary. Conducted in French. (Prerequisites: FREN 301 or 303 or equivalent and at least sophomore standing, permission of instructor. Next offered: 1989-90.)

FREN 488 3 Credits As Demand Warrants
Individual Study: Senior Project h
Designed to permit the student to demonstrate ability to work with the language and the culture through the analysis and presentation, in the language, of a problem chosen by the student in consultation with the department. The student must apply for senior project and submit a project outline by the end of the 6th week of the semester preceding the semester of graduation. Conducted in French. (Prerequisites: At least 10 credits in upper division French or permission of instructor.)

Geography

GEOG 101 3 Credits Fall and Spring
Introductory Geography (3+0) s
World regions, an analysis of environment, with emphasis on major culture realms.

GEOG 103 3 Credits Fall and Spring
World Economic Geography (3+0) s
Study of the world's major economic activities: their physical and cultural bases, spatial growth and distribution patterns, and their significance in interregional and international development.

GEOG 202 3 Credits Alternate Fall
Geography of United States and Canada (3+0) s
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 Anglo-America in current world economic and political geography. (Next offered: 1989-90.)

GEOG 205 3 or 4 Credits Fall and Spring
Elements of Physical Geography (3+0 or 3+3) n
Analysis of the processes that form the physical environment and the resulting physical patterns. Study of landforms, climate, soils, water resources, vegetation, and their world and regional patterns. Optional laboratory for one additional credit. (Prerequisite: GEOG 101 or 103 or permission of instructor. Offered every Spring at the Northwest Campus.)

GEOG 301 3 Credits Alternate Fall
Geographic Field Research Techniques
Theory and application of geographic methods of conducting field investigations. Collection, analysis, synthesis, and interpretation and reporting of data concerning the natural and human environments. (Permission of instructor. Next offered: 1989-90.)

GEOG 302 3 Credits Spring
Geography of Alaska (3+0) s
Regional, physical and economic geography of Alaska. Special consideration of the state's renewable and nonrenewable resources, and of plans for their wise use. Frequent class study of representative maps and visual materials. (Prerequisite: GEOG 101 and 205.)

GEOG 305 3 Credits Alternate Fall
Geography of Europe (except U.S.S.R.) (3+0) s
Regional, physical, economic and cultural geography of Europe, except U.S.S.R. (Prerequisite: GEOG 101 and 205. Next offered: 1989-90.)

GEOG 306 3 Credits Alternate Spring
Geography of the Soviet Union (3+0) s
The physical, cultural and historical geography of the U.S.S.R. with special emphasis on the geographic bases of the expansion of the Great Russians and the contemporary foundation of Soviet national power. (Prerequisite: GEOG 101 or 103 or 205 or permission of the instructor. Next offered: 1989-90.)

GEOG 309 3 Credits Alternate Spring
Cartography (1+6) s
Graphic techniques for presenting geographic data through the construction of maps, projections and charts. (Prerequisite: Permission of instructor. Next offered: 1989-90.)

GEOG 311 3 Credits Alternate Fall
Geography of Asia (3+0) s
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: GEOG 101 or 103 or 205 or permission of the instructor. Next offered: 1989-90.)

GEOG 315 3 Credits As Demand Warrants
Geography of Africa (3+0) s
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. (Prerequisite: GEOG 101 and 205.)

GEOG 327 3 Credits Spring
Cold Lands (3+0) s
The comparative physical, human, and economic geography of cold regions, with particular attention to Siberia, Greenland, Scandinavia and Canada. Special attention is given to the different approaches which have been taken toward economic development in cold regions. (Prerequisite: GEOG 101 or 103 or 205 or permission of the instructor.)

GEOG 339 3 or 4 Credits Spring
Advanced Physical Geography (3+0) or (3+3) n
Application of methodology of physical geography to analysis of regional landscapes. Optional laboratory for one additional credit. (Prerequisites: GOEG 101 or 103, 205.)

GEOG 401 3 Credits Alternate Fall
Weather and Climate (3+0) n
Introduction to the study of weather and classification of climates. (Prerequisite: permission of the instructor. Next offered: 1989-90.)

GEOG 402 3 Credits Alternate Fall
Culture and Environment (3+0) s
The relationship of cultures with the land they have occupied over time, in the context of the world's major regions. Consideration will be given to the significance of cultural diversity, differing patterns of livelihood, settlement and population change. (Prerequisite: GEOG 101 and 205. Next offered: 1989-90.)

GEOG 404 3 Credits Alternate Fall
Urban Geography (3+0) s
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, and 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. (Prerequisite: GEOG 101. Next offered: 1989-90.)

GEOG 405 3 Credits Alternate Fall
Political Geography (3+0) s
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 potential for international cooperation. (Prerequisite: GEOG 101. Next offered: 1989-90.)

GEOG 408 3 Credits Alternate Spring
Quantitative Research Techniques (3+0)
Philosophy and methodology in geography. Theories, laws, and models for measurement, analysis and explanation of geographic patterns and associations. Applications of findings to solution of geographic problems. (Prerequisites: Junior standing and college-level mathematics, or permission of the instructor. Next offered: 1989-90.)

Geological Engineering

GE 101 1 Credit Fall
Introduction to Geological Engineering (1+0)
An introduction to the many facets of geological engineering as a profession, the area and scope of the field. Graded pass/fail.

GE 261 3 Credits Spring
General Geology for Engineers (2+3)
(Same as GEOS 261)
Study of common rocks and minerals, landforms, erosion. Geologic materials and engineering application of geology. (Prerequisite: Geology, science, or engineering majors, or permission of instructor.)

GE 365 3 Credits Fall
Geological Engineering I (3+0)
Geological and geotechnical factors for the solution of engineering problems. Special emphasis on soils and permafrost. Some fieldwork and student report. (Prerequisites: GEOS 101 or GEOS/GE 261 and ES 208 or ES 209.)

GE 372 3 Credits Spring
Rock Engineering (3+0)
Rock engineering related to tunnels, slope design, and strata control. Some field work and student report. (Prerequisites: GEOS 101 or GE/GEOS 261 and ES 208 or ES 209.)

GE 375 3 Credits Fall
Terrain Analysis (3+0)
Evaluation of terrain characteristics using basic geomorphic and engineering principles. Consideration given to Alaskan applications. (Prerequisites: GE/GEOS 261 or GEOS 101.)

GE 405 4 Credits Spring
Exploration Geophysics (3+3)
Introduction to the theory and application of gravity, magnetic, electrical, electro-magnetic, radioactive, and seismic methods as used for geophysical exploration. Some field work required. (Prerequisites: MATH 200 and PHYS 211 or equivalent.)

GE 420 3 Credits Spring
Subsurface Hydrology (2+3)
Study of hydraulic characteristics of earth materials, engineering problems and models related to subsurface fluids, and properties of water. (Prerequisites: GE/GEOS 261 and PHYS 211.)

GE 431 2 Credits Alternate Fall
Applied Ore Microscopy (1+3)
Preparation of polished sections of ores. Identification of ore minerals in reflected light by physical, optical, and chemical methods. Applications to ore genesis, drill core interpretation, beneficiation, and process control. (Prerequisite: GEOS 213 or permission of the instructor. Next offered: 1989-90.)

GE 435 3 Credits Spring
Exploration Design (3+0)
Geologic, engineering, and economic considerations applied to the design and development of mineral exploration programs. (Prerequisites: GEOS 314 and GEOS 214 or permission of instructor.)

GE 440 3 Credits Alternate Spring
Slope Stability (3+0)
Slope design for open pit mining and other excavations. Stability analysis by various methods and on-site measuring and monitoring techniques. (Prerequisites: ES 331 or permission of instructor. Next offered: 1989-90.)

GE 471 3 Credits Spring
Remote Sensing for Engineering (3+0)
Applications of remote sensing to geological engineering problems. Introduction to digital satellite image processing with hands-on practice. (Prerequisites: GEOS 101 or GE/GEOS 261, GEOS 408, PHYS 212.)

GE 480 2 Credits Spring
Geological Engineering II (1+3)
A detailed study of geological and engineering factors for the solution of engineering problems. A term project is required. (Prerequisites: GE 365, GE 375 or permission of instructor.)

GE 630 3 Credits Alternate Fall
Advanced Applied Mining Geology (2+3)

GE 631 3 Credits Spring
Electron Microprobe Methods (2+3)

GE 633 3 Credits Fall
Fluid Inclusion Methods in Mineral and Petroleum Exploration (2+3)

GE 635 3 Credits Spring
Geostatistical Ore Reserve Estimation (2+3)
(Same as MIN 635)

GE 666 3 Credits Alternate Fall
Advanced Engineering Geology (2+3)

GE 668 3 Credits Alternate Spring
Tunneling Geotechniques (3+0)

GE 671 3 Credits Alternate Spring
Engineering Applications of Digital Image Processing (2+3)

Geoscience (Geology and Geophysics)

GEOS 100 4 Credits Spring
Introduction to Earth Science (3+3) n
A survey of four main disciplines of earth science-geology, oceanography, meterology, and astronomy. The lab portion has two main goals, one to provide students with a vehicle to learn scientific methodology and two, to provide students with lab evidence to support theories presented in lecture. (Prerequisite: English placement test)

GEOS 101 4 Credits Fall and Spring
The Dynamic Earth (3+3) n
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. Laboratory fee: $10.00.

GEOS 103 3 Credits As Demand Warrants
Lanscapes and Resources of Alaska (3+0)
Geological origins of the physical features of Alaska-mountains, volcanoes, islands and glaciers. Designed for those who want to learn more about the geology of Alaska and of the processes that formed it.

GEOS 105 3 Credits As Demand Warrants
Geology of America's National Park (3+0)
Explanations of prominent geologic features and landforms for which national parks and monuments have been selected. Brief descriptions of their geologic history.

GEOS 112 4 Credits Spring
Historical Geology (3+3) n
An introduction to the principles of historical geologic interpretation, the development of the geologic time scale, the stratigraphic record and its interpretation. Sedimentation and plate tectonics, the fossil record and its utilization, biostratigraphy, and the evolution of the North American continent through geologic time. Laboratory examination of fossils, interpretation of geologic maps and stratigraphic columns. Laboratory fee: $10.00. (Prerequisites: GEOS 101 with lab (4 credits) or GEOS/GE 261.)

GEOS 120A 1 Credit Spring
Earthquakes (1+0) n
A course for the non-specialist on the causes, effects, measurements and prediction of earthquakes. Topics include the distribution of earthquakes and relation to plate tectonics, catastrophic events in historic times, size and frequency of earthquakes, man-made earthquakes and earthquake prediction and control.

GEOS 120B 1 Credit Spring
Volcanos (1+0) n
A survey course on volcanos for the non-specialist. Topics will include the type of volcanic eruptions and characteristics deposits, volcanic rocks, size and frequency of eruptions, the distribution of volcanos in relations to plate tectonics, volcanism and geothermal energy, assessment of volcanic hazards, prediction and control of eruptions.

GEOS 120C 1 Credit Spring
Glaciers: Past, Present and Future (1+0) n
The distribution of glaciers in space and time and their effects on the landscape and humans. topics include the cause of an ice age, current distribution of glaciers in relation to climate, glacial flow, glacial deposits, interaction of humans with glaciers and glacial deposits.

GEOS 212 3 Credits Spring
Geology of Alaska (3+0) n
An overview of the geology of Alaska for non-majors. Modern geologic processes in Alaska will be used as a basis for understanding past geologic evolution of the region. The origin and recovery of Alaska's petroleum and mineral resources will be discussed. (Prerequisites: GEOS 101.)

GEOS 213 4 Credits Fall
Mineralogy (2+6) n
Introduction to mineral chemistry, atomic structure, elementary crystallography, optical crystallography and descriptive and determinative mineralogy. Includes introduction to instrumental determinative techniques (x-ray diffraction, petrographic microscope). (Prerequisites: GEOS 101 or 261; CHEM 105 and concurrent registration in MATH 107-108.)

GEOS 214 4 Credits Spring
Petrology and Petrography (2+6) n
Study of the origin, occurrence, and classification of igneous, sedimentary, and metamorphic rocks. Laboratory work involves hand lens identification and thin section examination of representative igneous, sedimentary and metamorphic rocks. Laboratory Fee: $10.00. (Prerequisite: GEOS 213.)

GEOS 261 3 Credits Spring
General Geology for Engineers (2+3) n
(Same as GE 261)
Study of common rocks and minerals, landforms, erosion. Geologic materials and engineering application of geology. (Prerequisite: Geology, science, or engineering majors, or permission of instructor.)

GEOS 262 3 Credits Alternate Fall
Rocks and Minerals (2+3)
Minerals and rocks in the earth; their physical properties, classification, mode of occurrence and economic applications. Role of rock materials in soil formation and fluid flow. Influence of minerals and rock properties on economic deposits and construction. Labs on recognition and measurement of physical properties. Course may not be used to satisfy degree requirements in Geology or Geological Enigneering. (Prerequisites: GE/GEOS 261, GEOS 101 or equivalent. Next offered: 1990-91.)

GEOS 304 3 Credits Fall
Geomorphology (2+3) n
Study of the Earth's surface features and the processes which create or modify them. Application to Quaternary history, environmental science and related fields. Laboratory examination of topographic maps and aerial photographs, introduction to geomorphic measurements. Laboratory fee: $10.00. (Prerequisite: GEOS 101.)

GEOS 314 4 Credits Spring
Structural Geology (3+3) n
Origin and interpretation of primary and secondary geologic structures. Graphical solution of structural problems. Laboratory Fee: $10.00. (Prerequisites: GEOS 112, PHYS 103 or 211, MATH 201, GEOS 214 [or concurrent registration].)

GEOS 321 3 Credits Alternate Fall
Sedimentology (2+3) n
Broad survey of sediments, including origin, classification, composition, transportation, deposition, and diagenesis. Laboratory instruction covers identification and description of hand specimens as well as techniques of textural and compositional analysis. Laboratory fee: $10.00. (Prerequisite: GEOS 213 or permission of instructor. Next offered: 1990-91.)

GEOS 322 4 Credits Spring
Stratigraphy and Sedimentation (3+3) n
Analysis of sequence in sediments including principles of litho-, bio- and chronostratigraphy and facies analysis. Surface and subsurface methods utilizing petrologic and geophysical data. Laboratory emphasizes correlation problem from geologic maps and subsurface data. (Prerequisites: GEOS 101 or GEOS 261, and GEOS 112).

GEOS 350 2 Credits Spring
Geologic Field Methods (1+3) n
An introduction to geologic field techniques as a spring preparation for field geology (GEOS 351). It includes an introduction to basic field mapping techniques, library research, data presentation, and report writing. Approximately two thirds of the course will be devoted to lecture on geologic mapping techniques, use of instruments, and making field observations. The course ends with completion of a plane table surveying project and various field mapping and observational exercises. Laboratory Fee: $10.00. (Prerequisites: Junior standing in geology or permission of instructor.)

GEOS 351 4 or 6 Credits Summer
Field Geology (Arranged) n
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 table 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; apply through the department. Class usually is filled to capacity by February of current year. Geophysics option students may elect to take this course for 4 credits if they also register for GEOS 451, Field Geophysics. All others must take 6 credits. (Prerequisites: Junior standing in geology, GEOS 350 or equivalent and permission of instructor.)

GEOS 370 4 Credits Spring
Sedimentary and Structural Geology for Petroleum Engineers (3+3) n
Origin and distribution of sedimentary rocks including depositional environments, stratigraphic relationships, and structures. Emphasis on the relationship to petroleum occurrences and petroleum exploration. Laboratory exercises on mapping, structural problems and facies relationships in petroleum exploration. (Prerequisite: GEOS 101 or GE/GEOS 261.)

GEOS 401 4 Credits Fall
Invertebrate Paleontology (3+3) n
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. (Prerequisites: GEOS 101 or by permission of instructor; BIOL 305 recommended.)

GEOS 408 2 Credits Alternate Spring
Photogeology (1+3) n
Use of topographic maps, geologic maps, aerial photographs, and satellite imagery in the interpretation of geological structures, landscapes, landforms, and geomorphic processes. Techniques included are map compilation, photo mapping, statistical treatment of map data, and composite mapping for planning purposes. Laboratory fee: $10.00 (Prerequisite: GEOS 304 or permission of instructor.)

GEOS 410 2 Credits Fall
Potential Methods in Geophysics (1+3) n
The fundamental theory of potential methods and the application to geophysical exploration will be studied along with the basic techniques and methods of interpretation of gravimetric and magnetic measurements. Class meets for one-half of the semester only. (Prerequisites: MATH 201, PHYS 212, or permission of instructor.)

GEOS 411 3 Credits Spring
Seismic Exploration (2+3) n
The study of the fundamental principles of seismic exploration techniques, beginning with the basic laws of seismic wave propagation and ending with the practical application of the techniques, including both reflection and refraction methods. Class meets for one-half of the semester only. (Prerequisites: MATH 201, PHYS 212, or permission of instructor.)

GEOS 412 2 Credits Fall
Electrical Methods in Geophysics (1+3) n
The fundamental principles of electrical resistivity and current flow in the earth and the practical application in the realm of geophysical exploration will be studied. Class meets for one-half of the semester only. (Prerequisites: MATH 201, PHYS 212, or permission of instructor.)

GEOS 414 3 Credits Alternate Fall
Introduction to Glaciology (3+0) n
A broad survey of and introduction to glaciology including thermodynamics of phase relations, supercooling, nucleation, and freezing of water in the laboratory and in rivers, lakes, oceans, cloud droplets, soil, and animal and plant tissue. Physical processes in seasonal and perennial snow and transformation of snow to glacier ice will be examined, as well as distribution and classification of glaciers, mass balance of glaciers, glacier flow and causes of glaciation. Physical properties of and processes in frozen ground and sea ice will be studied. (Prerequisite: MATH 201 or permission of instructor. Next offered: 1989-90.)

GEOS 417 3 Credits Fall
Introduction to Geochemistry (3+0) n
Introduction to chemistry of the earth. (Prerequisites: CHEM 105-106 or permission of instructor.)

GEOS 418 3 Credits Fall
Basic Geophysics (3+0) n
The basic concepts and techniques of geophysics as applied on a global scale. Topics covered will include the origin of the earth, its structure, and the large scale dynamic processes responsible for its surface features. Geophysical techniques including seismology, gravity, magnetometry, and electrical methods will be discussed along with measurements of the earth's thermal structure, rotation rates, and the effects of the tides. (Prerequisite: Permission of the instructor.)

GEOS 419 4 Credits Alternate Spring
Continuum Mechanics (4+0) n
Mechanics of continuous deformable media; analysis of stress and strain using tensor notation; elastic, viscous, plastic and visco-elastic constitutive laws with examples from the geophysical environment including hydrology, geology, glaciology and meterology. (Prerequisites: PHYS 211 212 and MATH 302 or permission of instructor. Next offered: 1989-90)

GEOS 420 4 Credits Alternate Fall
Elements of Seismology (3+3) n
Global distribution of earthquakes; causes and effects of earthquakes with reference to Alaska; instrumentation utilization for the determination of earthquake sources and subsurface structures; introduction to the techniques used for studies of seismotectonics and earthquake prediction. (Prerequisites: Geoscience students: MATH 201; Civil Engineering students: ES 331. Next offered: 1989-90)

GEOS 422 3 Credits Fall
Geoscience Applications of Remote Sensing (3+0) n
Introduction to the scope of remote sensing and its applications to geologic, environmental and physical sciences. Includes explanation of nomenclature, a review of types of remote sensing systems, and study of the forms in which remote sensing data is available. Emphasis placed on the use of LANDSAT, radar imagery, thermal imagery and color infrared photography. (Prerequisites: GEOS 101, PHYS 103 or 211, junior standing or consent of the instructor.)

GEOS 430 3 Credits Spring
Statistics and Data Analysis in Geology (3+0) n
An introduction to the use of the computer and statistics in geology and related sciences. The course stresses geologic applications of elementary statistics, Markov chains, time-series analysis, trend-surface analysis, factor analysis, cluster analysis, discriminant analysis, and multiple regression. (Prerequisites: MATH 200 or STAT 301; senior standing or permission of instructor.)

GEOS 432 3 Credits Fall
Geology of Mineral Resources (3+0) n
An introduction to the occurrence and characteristics of metallic and selected non-metallic mineral deposits, geographic locations, petrotectonic settings, mineralogic and petrologic features, and theories of genesis, with applications to exploration and development. (Prerequisites: GEOS 214, GEOS 314, GEOS 322, GEOS 401)

GEOS 432L 2 Credits Fall
Geology of Mineral Resources Laboratory (1+3) n
Laboratory work includes identification, characterization and systematic description of major ore types. Laboratory fee: $10.00. (Prerequisites: GEOS 214)

GEOS 451 2 Credits Summer
Practical Field Geophysics n
Designed to be a "hands-on" practical geophysics course involving both data acquisition and reduction. Techniques used will include gravimetric, radiometric, resistivity, magnetic, electro-magnetic and seismic. Taught concurrently with the last two weeks of GEOS 351, Field Geology. Entrance by preregistration only; apply through the department. Class usually is filled to capacity by February of current year. (Prerequisites: MATH 201, PHYS 212, and introductory exploration geophysics, and permission of instructor.)

GEOS 462 4 Credits Alternate Fall
Glacial and Periglacial Geology (3+3) n
An introduction to glaciers and their geological processes. The course emphasizes recognition and understanding of glacial landforms, sediments, and stratigraphic relations, and their implications for paleoclimatology, and paleogeography. Non-glacial techniques and methods for interpreting Quaternary sediments are also emphasized. Laboratory fee: $10.00. (Prerequisite: GEOS 304. Next offered: 1989-90.)

GEOS 465 3 Credits Alternate Spring
Geoarcheology (3+0)
(Same as ANTH 465)
The geological context of archeological sites and the geologic factors that affect their preservation, with emphasis on Alaska. Includes a one or two-day field trip planned for a weekend in late April or early May. (Prerequisites: GEOS 101, an introductory course in archeology, or permission of instructor. Next offered: 1989-90.)

GEOS 470 4 Credits Alternate Fall
Petroleum Geology (3+3)
The study of the basic elements required for hydrocarbon accumulation: source, maturation, migration, reservoir, seal, and trap. These elements, and exploration and production practices will be illustrated using examples of oil and gas fields throughout the world. The lab will provide practical experience with the tools and techniques of surface and subsurface exploration. (Prerequisites: GEOS 314, GEOS 321, GEOS 322. Next offered: 1989-90.)

GEOS 482 1 Credit Fall and Spring
Geology Seminar (1+0)
A weekly seminar series designed to explore a geologic theme of current interest for a complete semester. (Prerequisite: Senior or graduate standing or permission of instructor.)

GEOS 603 1-2 Credits As Demand Warrants
Advanced Field Mapping (0+3)-(1+3)

GEOS 604 3 Credits Alternate Fall
Intermediate Seismology (3+0)

GEOS 605 3 Credits Spring
Geochronology (3+0)

GEOS 606 2 Credits Spring
Volcanology (2+0)

GEOS 607 2 Credits Spring
Advanced Paleomagnetism (1+3)

GEOS 608 2-4 Credits As Demand Warrants
Advanced Exploration Geophysics (2-4+0)

GEOS 609 2-4 Credits Fall-Spring
Advanced Geomorphology (2-4+0-3)

GEOS 610 3 Credits Alternate Spring
Advanced Seismology (3+0)

GEOS 611 3 Credits Alternate Fall
Tectonics and Sedimentation (3+0)

GEOS 612 3 Credits Fall
Geologic Evolution of Alaska (3+0)

GEOS 615 3 Credits Alternate Spring
Sea Ice (3+0)

GEOS 616 3 Credits Alternate Spring
Permafrost (3+0)

GEOS 617 3 Credits Alternate Fall
Glaciers (3+0)

GEOS 618 2 Credits Spring
Topics in Alaskan Geology (2+0)

GEOS 621 3-4 Credits Fall-Spring
Advanced Petrology (2-3+3-6)

GEOS 622 4 Credits Fall
Advanced Clastic Petrology (3+3)

GEOS 624 1-4 Credits Fall-Spring
Advanced Structural Geology and Geotectonics (1-4+0)

GEOS 625 3 Credits Alternate Fall
Mountain Belts of the World (3+0)

GEOS 631 3 Credits Alternate Spring
Advanced Geochemistry (1-3+0)

GEOS 632 4 Credits Spring
Advanced Study of Mineral Deposits (3+3)

GEOS 635 1-4 Credits Fall-Spring
Advanced Economic Geology (1-4+0-3)

GEOS 636 2 Credits Fall
Scientific Methods, Strategies and Tools in Geology (2+0)

GEOS 640 4 Credits Alternate Spring
Petrology of Carbonate Rocks (3+3)

GEOS 641 1-3 Credits As Demand Warrants
Advanced Paleontology (1-3+0)

GEOS 642 3 Credits Spring
Advanced Sedimentary Petrology (2+3)

GEOS 643 3 Credits Alternate Fall
Sandstone Depositional Environments (3+0)

GEOS 644 3 Credits Spring
Advanced Stratigraphy (3+0)

GEOS 645 3 Credits Alternate Fall
Advanced Carbonate Sedimentology (3+0 or 2+3)

GEOS 646 3 Credits Alternate Spring
Seismic Stratigraphy (2+3)

GEOS 647 3 Credits Alternate Fall
Advanced Sedimentology (3+0)

GEOS 648 3 Credits Alternate Fall
Sedimentary Basin Analysis (3+0 or 2+3)

GEOS 649 3 Credits Alternate Spring
Geomorphology of the Unglaciated Arctic and Subarctic (3+0)

GEOS 650 3 Credits Alternate Fall
Paleoecology of Beringia (3+0)

German

(For UAF program in Germany, see International Programs.)

GER 075 3 Credits As Demand Warrants
GER 076 3 Credits As Demand Warrants
Coversational German I and II (3+0)
An introductory course for students who wish to acquire the ability to speak German. Students first learn to understand simple spoken language, then to speak simple German developing a beginning level of communicative competence in the language. (Prerequisite: GER 075 for 076.)

GER 101 5 Credits Fall
GER 102 5 Credits Spring
Elementary German I and II (5+0) h
Introduction to the language and culture; development of competence and performance in the language through understanding, recognition, and use of linguistic structures; increasing emphasis on listening comprehension and speaking; basic vocabulary of approximately 1,000 words, exploration of the cultural dimension, implicitly through language, and explicitly through texts and audio-visual materials; use of Foreign Language Learning Center.

GER 201 3 Credits Fall
GER 202 3 Credits Spring
Intermediate German I and II (3+0) h
Continuation of GER 102. Increasing emphasis on reading ability and cultural material. Conducted in German. (Prerequisite: GER 102 or equivalent.)

GER 288 2 Credits Spring
Individual Study: Reading German h
Emphasis on rapid expansion of passive vocabulary and immediate recognition of frequent idiomatic expressions and grammatical structures, development of true reading skill, modern literary and/or non-literary texts. (Prerequisites: GER 201, equivalent training or permission of instructor. Recommended to be taken concurrently with GER 202.)

GER 301 3 Credits Alternate Fall
GER 303 3 Credits Alternate Fall
Advanced German (3+0) h
Discussions and essays on more difficult subjects or texts. Translations, stylistic exercises, and special grammatical problems. Conducted in German. (Prerequisite: GER 202 or equivalent. GER 301 next offered: 1989-90; GER 303: 1990-91.)

GER 387 2 Credits Fall
Individual Study: Semantics h
Systematic expansion of passive and active vocabulary through analysis of word fields, series of synonyms and antonyms, principles of work formation, derivation, composition, etc. Conducted in German. (Prerequisites: GER 202 or permission of instructor.)

GER 432 3 Credits Alternate Spring
Studies in German Literature and Culture (3+0) h
Intensive study of authors, literary movements, periods, and/or genres. Analysis of cultural material other than texts. Conducted in German. Student may repeat course for credit when topics vary. (Prerequisites: GER 301 or 303 or equivalent and at least sophomore standing, or permission of instructor. Next offered: 1989-90.)

GER 487 2 Credits Alternate Fall
Individual Study: Translation of German Texts h
Expansion of vocabulary and grammatical knowledge, emphasis on understanding precise shades of meaning, stylistics, artistic expression and cultural values in language; and literary and non-literary texts. Student may repeat course for credit if material varies. Conducted in German. (Prerequisites: GER 301 or 303 or equivalent and at least sophomore standing, or permission of instructor. Next offered: 1989-90.)

GER 488 3 Credits As Demand Warrants
Individual Study: Senior Project h
Designed to permit the student to demonstrate ability to work with the language and the culture through the analysis and presentation, in the language, of a problem chosen by the student in consultation with the department. The student must apply for senior project and submit a project outline by the end of the 6th week of the semester preceding the semester of graduation. Offered normally in the semester preceding the student's graduation. Conducted in German. (Prerequisites: At least 10 credits in upper division German or permission of instructor.)

Health

HLTH 120 1 Credit As Demand Warrants
Industrial First Aid (1+0)
This course includes CPR training, control of bleeding and shock, recognizing heart problems, stroke, poisoning, sugar diabetes, epileptic seizures, and dealing with major trauma injuries such as fractures, head, neck and back injuries. Also covered are hypothermia, frostbite, and cold water near-drowning. Students need to purchase text ($5.00) at first class meeting. Upon satisfactory completion of course, students will receive a Mines Safety Health Administration Certificate, a State Industrial First Aid Card, and the American Heart Association CPR card.

HLTH 281 1 Credit As Demand Warrants
Pharmacology Update (1+0)
Update on pharmacology including review of old drugs and information on new drugs. Review of Pharmaceutical calculations and pharmacodynamics. (Prerequisite: Practicing or licensed nurse.

History

HIST 101 3 Credits Fall
Western Civilization (3+0) s
The origins and major political, economic, social, and intellectual developments of western civilization to 1500.

HIST 102 3 Credits Spring
Western Civilization (3+0) s
Major political, economic, social, and intellectual developments of western civilization since 1500.

HIST 103 3 Credits As Demand Warrants
History of the Yukon-Kuskokwim Delta (3+0)
This course covers the history of the Yukon-Kuskokwim Delta beginning with oral traditions about the creation of the area, and ending with the passage of the Alaska Native Land Claims Act in 1971. The course concentrates on Yup'ik social, economic, and educational changes that have occurred, including both native and non-native accounts of these changes. Offered only at the Kuskokwim Campus.

HIST 105 1 Credit As Demand Warrants
Introduction to the History and Culture of the Seward Peninsula (1+0)
(Same as ANTH 205)
This course introduces the student to the cultural history of the people who have lived on or near the Seward Peninsula for the last 10,000 years. Information is presented from the disciplines of physical anthropology, ethnography, ethnohistory, linguistics, archaeology, social anthropology, ecology, and climatology. Through lectures, discussions, readings films, guest speakers, and examination of Eskimo artifacts, students gain a basic familiarity with the several Eskimo and Euro-American cultures with have existed in western Alaska.

HIST 110 3 Credits Fall and Spring
History of Alaska Natives (3+0) s
The history of Alaska Natives from contact to the signing of the Claims Settlement Act.

HIST 115 3 Credits Spring
Alaska, Land and Its People (3+0) s
A survey of Alaska from earliest days to present, its peoples, problems, and prospects.

HIST 121 3 Credits Alternate Fall
East Asian Civilization (3+0) s
Origin and development of the civilizations of China, Japan and Korea from the beginning to 1800, with emphasis on traditional social, political, and cultural institutions. (Next offered: 1989-90.)

HIST 122 3 Credits Alternate Spring
East Asian Civilization (3+0) s
East Asia from 1800 to the present with emphasis on patterns of social cohesion, transition, and revolutionary change. (Next offered: 1989-90).

HIST 123 3 Credits As Demand Warrants
Japan: The Changing Tradition (3+0)
Focuses on the history and changing cultural traditions of Japan's modern era, the brief period during which Japan has developed its own distinctive form of an urbanized, industrialized, and democratic society.

HIST 131 3 Credits Fall
HIST 132 3 Credits Spring
History of the U.S. (3+0) s
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 200 3 Credits As Demand Warrants
Heritage of Alaska Natives (3+0)
Students will acquire a basic understanding of Alaska Native cultures through readings and lectures and research. The class will explore kinship systems, world views, social organizations, etc., throughout the course. The course will cover pre-contact days to the present including a surface look at the results of the Native Land Claims Act.

HIST 201 3 Credits As Demand Warrants
History of the Bering Straits (3+0) s
This course covers the multi-faceted history of this region, including prehisotry, exploration and permanent settlement, in addition to material culture, religion, education and other topics. This class will focus on the means by which factors in each of these areas have influenced the development of the region as it exists today. Analysis of the perceptions of others as they appear in writings about the region are an integral part of the class.

HIST 221 3 Credits Alternate Fall
HIST 222 3 Credits Alternate Spring
English History (3+0) s
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. (Next offered: 1990-91)

HIST 244 3 Credits As Demand Warrants
Movies: Mirror of the World (3+0)
An introduction to world history using the medium of film to highlight cultural, economic and political conditions of each country. Films will be from the USA, Mexico, Central America, South America, England, France, Russia, Turkey, India, China, Japan, Australia, Africa, and the Arctic. Offered only at the Kuskokwim Campus.

HIST 250 3 Credits As Demand Warrants
Alaska History for Local Historians (3+0)
This is a course in Alaskan history with a strong local focus. Students will begin by studying the history of their region and then concentrate on their community. assignments are designed to introduce the local historian to a variety of resources and research methods including exploration accounts, oral history, education reports, census studies, newspapers, etc. A final project of original research is required. This local history course is currently available with emphasis on the Bering Straits, Bristol Bay, and Aleutian/Pribilof regions.

HIST 257 3 Credits As Demand Warrants
Gold Rush Era: Myth and Reality (3+0)
A general investigation into Gold Rush Era of 1880-1905 in Alaska and the Yukon. The major emphasis will be on the Klondike, but Juneau, Nome and Fairbanks will also be investigated. Both fact and fiction will be utilized to understand the myth and reality of the era.

HIST 305 3 Credits Alternate Fall
Europe: 1789-1850 (3+0) s
The French Revolution, Napoleon, the Industrial Revolution, the Revolutions of 1848, their impact on political, economic, social and intellectual history. (Prerequisite: HIST 102 or permission of instructor. Next offered: 1989-90.)

HIST 306 3 Credits Alternate Spring
Europe: 1850-1900 (3+0) s
The European Imperium—industrialization, nationalism, imperialism and their impact on political, economic, social and intellectual history. (Prerequisite: HIST 102 or permission of instructor. Next offered: 1989-90.)

HIST 315 3 Credits Alternate Fall
Europe: 1900-1945 (3+0) s
Europe through two world wars, the Russian Revolutions, the depression, the development of fascism, the evolution of Russian Communism. (Prerequisites: HIST 101, 102 or permission of instructor. Next offered: 1989-90.)

HIST 316 3 Credits Alternate Spring
Europe since 1945 (3+0) s
Germany and problems of the Peace, the Soviet Union and the Satellites, the Cold War, Economic Problems and Recovery, European Integration and the Common Market, Europe and the World. (Prerequisites: HIST 101, 102 or permission of instructor. Next offered: 1989-90.)

HIST 320 3 Credits Alternate Spring
Modern Scandinavia (3+0) s
Scandinavia (Denmark, Finland, Iceland, Norway, and Sweden) from the 19th Century to the present: the development of Scandinavian parliamentary democracy and welfare systems, Scandinavian cooperation and neutrality, and Scandinavia's experience in the world wars. (Prerequisites: HIST 101 or 102, or permission of the instructor. Next offered: 1989-90.)

HIST 330 3 Credits Alternate Fall
Modern China (3+0) s
From 1800 to the present: resistance to change, rebellion, reform, revolution, and the rise of the People's Republic. (Prerequisite: HIST 121 or 122, or permission of instructor. Next offered: 1989-90.)

HIST 331 3 Credits Alternate Spring
Modern Japan (3+0) s
From 1600 to the present: change within tradition, rise to world power, and the position of Japan in the modern world. (Prerequisite: HIST 121 or 122, or permission of instructor. Next offered: 1989-90.)

HIST 340 3 Credits Fall
Russian Eastward Expansion (3+0)
A history of Russian exploration, conquest and settlement in Siberia, Central Asia and the Caucasus region, including the impact of this contact on the indigenous peoples and on relations with other countries. (Prerequisites: HIST 101, HIST 102 or permission of instructor.)

HIST 341 3 Credits Fall
History of Alaska (3+0) s
Alaska from prehistoric times to the present. Research methodology and use of archival resources relating to Alaska's past. (Prerequisite: Junior standing.)

HIST 344 3 Credits Spring
Modern Russia (3+0) s
Origin and development of modern Russia from the nineteenth century to the present: the development of the Soviet Union and Soviet government, stages of economic development, and Soviet foreign policy. (Prerequisites: HIST 101, 102, or permission of the instructor.)

HIST 350 3 Credits Alternate Spring
History of the People's Republic of China (3+0) s
Political, economic, and social developments, from 1949 to the present. (Prerequisite: HIST 121 or 122, or permission of instructor. Next offered: 1989-90.)

HIST 354 3 Credits Alternate Fall
Canadian History to 1867 (3+0) s
The political, social, and economic development of Canada from the founding of New France to Confederation. (Next offered: 1989-90.)

HIST 355 3 Credits Alternate Spring
Canadian History: 1867 to Present (3+0)
The political, social, and economical development of Canada from Confederation to the present. (Next offered: 1989-90.)

HIST 375 3 Credits Alternate Fall
History of the Northern Pacific (3+0) s
The historical development and interrelationships and problems of the North Pacific (Siberia, Canada, Alaska) from the 18th century to the present. (Prerequisite: Junior standing or permission of instructor. Next offered: 1989-90.)

HIST 380 3 Credits Alternate Spring
Polar Exploration and its Literature (3+0) s
A survey of polar exploration efforts of all Western nations from A.D. 870 to the present and a consideration of the historical sources of this effort. (Prerequisite: Junior standing or permission of instructor. Next offered: 1989-90.)

HIST 382 3 Credits Alternate Spring
History of Circumpolar Research (3+0) s
(Same as LS 382)
Explores the systematic development of knowledge of the circumpolar northern regions in all fields. Studies the history of arctic and subarctic sciences such as geological, biological and atmospheric sciences and the study of people through anthropology, ethnography, linguistics and history. Cold regions engineering and technology as well as research in education, government and law are covered. The literature and source material for a study of these fields will be analyzed. (Prerequisite: HIST 110 or 115 or ANTH 242 or BIOL 104 or permission of instructor. Next offered: 1989-90.)

HIST 384 3 Credits Alternate Fall
20th Century Circumpolar History (3+0)
A comparative history of the circumpolar north, including Alaska, Siberia, Scandinavia, Greenland and Canada. The course will focus on the major social, economic, political and environmental issues of the 20th century, such as exploration, aboriginal land claims, subsistence, military strategy, transportation, oil development, Arctic haze, and scientific research in the Arctic. (Prerequisite: Junior standing or permission of the instructor. Next offered: 1989-90.)

HIST 401 3 Credits Alternate Fall
Renaissance and Reformation Europe (3+0) s
Political, economic, and intellectual developments during the 15th and 16th centuries in Europe. (Prerequisites: HIST 101 or 102 and junior standing, or permission of instructor. Next offered: 1989-90.)

HIST 402 3 Credits Alternate Fall
Seventeenth and Eighteenth Century Europe (3+0) s
Political, social, economic, and cultural developments during the 17th and 18th centuries in Europe. (Prerequisites: HIST 101 or 102 and junior standing, or permission of instructor. Next offered: 1990-91.)

HIST 405 3 Credits Alternate Fall
Modern Germany (3+0) s
1848 to present: Unification, the Second Empire, WWI, the Weimar Republic, National Socialism, WWII, the Holocaust, and the creation of two post-war German states with different societies. Emphasis on political, social and economic developments. (Prerequisite: HIST 101 or 102. Next offered: 1989-90)

HIST 420 3 Credits Alternate Spring
Approaches to Women's History (3+0) s
A theoretical and topical approach to the study of the history of women: the role of women in politics, the economy, the family, wartime, the influence of industrialization, and changing social structures on women. (Prerequisites: HIST 102, 132, or permission of the instructor. Next offered: 1990-91.)

HIST 430 3 Credits Alternate Fall
American Colonial History (3+0) s
Early America European settlement: economic and social development of the American community establishment of political independence. (Prerequisites: HIST 131, 132 or permission of instructor. Next offered: 1989-90.)

HIST 435 3 Credits Alternate Spring
Civil War and Reconstruction (3+0) s
Political, economic, social and diplomatic history of 1860-77, disruption and re-establishment of the Union. (Prerequisites: HIST 131, 132 or permission of instructor. Next offered: 1989-90.)

HIST 440 3 Credits Alternate Fall
U.S. Westward Expansion 1763-1867 (3+0) s
Westward expansion and acquisition of territory, admission of new states, development of land policy, treatment of native people. (Prerequisites: HIST 131 or permission of instructor. Next offered: 1989-90.)

HIST 441 3 Credits Alternate Spring
The Development of the American and Canadian West 1867-Present (3+0) s
Building of transcontinental railroads and plains settlement in U.S. and Canada and Klondike gold rush. Theories of frontier development, statehood movements and views of the West as a 'colonial' region in the 20th century. (Prerequisite: HIST 132 or HIST 440 or permission of instructor.)

HIST 450 3 Credits Alternate Spring
Twentieth Century America (3+0) s
United States from the progressive movement to the present day, with emphasis on domestic developments. (Prerequisites: HIST 131, 132 or permission of instructor. Next offered: 1989-90.)

HIST 455 3 Credits Alternate Fall
Military History (3+0) s
Warfare from classical times to the present: the interrelationships of warfare and society, the role of technology and the development of tactics and strategy. (Prerequisites: Junior standing or permission of instructor. Next offered: 1989-90.)

HIST 475 3 Credits Fall
HIST 476 3 Credits Spring
Historiography and Historical Method (3+0) s
A two-semester sequence given as a tutorial for each student. The first semester is devoted to a comparison of the historical treatment of a particular subject by different historians. Three short papers are required. In the second semester the student writes a lengthy research paper on a topic of his or her own choosing. (Those students needing only 3 credits of HIST 475-476 will do the work outlined for the first semester. This can be done either the fall or the spring term.) (Prerequisite: Senior standing or permission of instructor.)

HIST 490 3 Credits Alternate Spring
Researching and Writing Academic and Public Northern History (3+0) s
The practical aspects of publication and problem solving in public history. Research will familiarize students with source materials in both the Archives and governmental agencies. (Prerequisite: HIST 475. Next offered 1989-90)

HIST 640 3 Credits Spring
Russian America (3+0)

Honors

HONR 390 3 Credits Alternate Spring
Liability and Ethics: Practical Questions in Today's Complex Society (3+0) s
Ethical questions regarding the practice of a profession in today's complex society will be explored. These will be integrated into the associated fields of law, liability and insurance, among other fields, as they relate to working in today's highly competitive marketplace. (Prerequisites: Sophomore standing and permission of the Honors Director or instructor.)

Human Services

HMSV 201 3 Credits Fall
Introduction to Human Services (3+0)
The purpose of this course is to acquaint students with the various social programs and human services which constitute society's organized response to social problems. Federal programs authorized by the Social Security Act and other legislation are presented, and various community services are described, including those directed at child welfare, alcohol and drug abuse, mental health, juvenile delinquency, and discrimination. Local human service agencies are discussed, as well as regional offices located in the rural areas. (Prerequisites: SOC 101 or PSY 101).

HMSV 205 3 Credits Fall
Factors in Health and Disease (3+0)
Introduction to the phenomenon of human disease. Cases will be presented to demonstrate the way the normal healthy state may be disrupted by external or internal influences. The natural histories of major types of disease will be reviewed.

HMSV 210 3 Credits Alternate Fall
Crisis Intervention (3+0)
An examination of theoretical foundations and appropriate techniques and strategies to deal with individuals, families, and groups during stressful situations. Application of the crisis approach is made in several categories of stress-induced situations, such as natural disasters, developmental life crises, rapid social change, and situational crises such as illness and personal loss. (Prerequisites: SOC 101, PSY 101 of permission of instructor. Next offered: 1990-91.)

HMSV 225 2 Credits As Demand Warrants
Case Management (2+0)
(Same as Swk. 225)
Introduction to basic knowledge and skills needed to develop service plans in human service work and to maintain appropriate case records. Legal and ethical issues in case management are considered and discussed.

HMSV 230 3 Credits Fall
Alcoholism: Causes and Consequences
An examination of the theories concerning the causes of alcoholism to include physical and psychological factors, such as personality disorders or disease states. Data supporting these theories will be evaluated. (Prerequisites: SOC 101 or PSY 101 or permission of instructor.)

HMSV 255 3 Credits Fall
Foundations of Counseling I (3+0)
(Same as PSY 255)
A survey of counseling philosophy and the various types of counseling systems that are used in most settings. An examination of the appropriate approach and system match will be undertaken so that the student will be able to make intelligent decisions concerning which approach to use. Some of the approaches examined will be psychoanalysis, behavior therapy, and humanistic approaches. Offshoots of these approaches will also be surveyed if they are in fairly wide use. Counseling ethics will be studied and ethical problems illustrated and discussed. (Prerequisites: PSY 101, PSY 240 or permission of instructor.)

HMSV 284 Variable Credits As Demand Warrants
Human Services Seminar
Identification and discussion of issues relevant to the human services field. Specifice topics to be announced. (Prerequisite: Permission of instructor.)

HMSV 330 3 Credits Spring
Alcoholism: Treatment and Prevention
A survey and evaluation of treatment and prevention attempts in dealing with alcoholism and alcohol abuse with emphasis placed on prevention strategies. (Prerequisites: HMSV 230.)

HMSV 356 3 Credits Spring
Foundations of Counseling II (3+0)
(Same as PSY 356)
Continuation of HMSV 255 — Foundations of Counseling I. Specific counseling strategies will be studied in-depth such as crisis intervention, individual techniques such as the rational therapies and specific behavioral approaches. The role of the counselor in community education and consultation will be explored as will methods of promoting community change. Issues in cross-cultural counseling will be studied to include those likely to be encountered in Alaska. (Prerequisite: HMSV 255 or PSY 355.)

HMSV 410 3 Credits As Demand Warrants
Management of Human Services Programs (3+0)
Human service personnel at the baccalaureate level are often required to supervise associates or aides with less training. In rural areas such personnel may also assume responsibilities for program development and management. This course is designed to prepare students for supervisory and managerial tasks at a beginning level. It is anticipated that additional in-service training would be made available to provide techniques that are agency-specific. (Prerequisites: HMSV 255.)

HMSV 415 3 Credits As Demand Warrants
Group Processes (3+0)
An examination of various group types to include problem solving/task-oriented groups; encounter groups; therapy groups; career guidance groups; and assertive training groups. Different theoretical orientations to groups counseling will also be discussed. (Prerequisites: HMSV 255 and HMSV 356.)

HMSV 445 3 Credits Fall
Community Psychology (3+0)
(Same as PSY 445)
An examination of community psychology foundations to include community assessment consultation as edited in psychology. Topics covered during the community assessment include identification of areas for study, surveys, evaluation of services, and use of results for programming. During the community consultation portion, education, prevention, and service issues are covered. Particular attention will be given to rural and small community assessment and change especially as it applies to Alaska. (Prerequisites: PSY 101, SOC 101 and HMSV 201.)

HMSV 488 3-6 Credits Fall and Spring
Practicum in Human Services
This course teaches the student skills with which to work in a human service agency either concurrently with an agency placement or prior to placement. Skills covered include interviewing, assessment, facilitating, intervening, and in general, case management. Students will be meeting with an instructor from the Department weekly to learn counseling skills through use of instruction, role-playing, video tapes, and various types of feedback. In addition, an instructor will be appointed by the university from the agency for practicum supervision of the student. (Prerequisites: HMSV 255. Student must be a major in the program.)

Humanities

HUM 101 3 Credits As Demand Warrants
The Humanities: A Cultural Perspective (3+0)
This course examines the humanities using both Western Civilization and the Yup'ik cultures as bases. It introduces fundamental principles of the performing and visual arts as displayed in Yup'ik and Non-Yup'ik art forms. It acquaints the student with ideas and cultural developments that have stirred and enriched civilization. It considers various aspects of Yup'ik and Western Culture to help students develop greater awareness of forces that affect them.

HUM 131 3 Credits As Demand Warrants
Introduction to Alaska Literature (3+0)
The course has two aims: to provide an introduction to literature, poetry and drama; and to increase the student's appreciation of Alaskan literature written by both natives and non-Natives. Students will read examples from oral Native tradition, the frontier era, and meet the contemporary living writers by audioconference.

HUM 161 3 Credits As Demand Warrants
In Our Own Image (3+0)
Focuses on some very basic notions about people-how they see things and what they care about-and some very basic notions about the find arts-how they are created, how they communicate, and how they can be evaluated.

HUM 201 3 Credits Fall
Unity in the Arts (3+0) h
Concentration on the interdependence of the visual arts, the performing arts, and literature, as set against a specific social, political, and cultural background of selected eras. (Prerequisite: Open to students beyond the freshman level or by permission of the instructor.)

HUM 202 3 Credits Spring
Unity in the Sciences (3+0) h
A detailed treatment of the scientific rudiments, methods, and principles as they emerged from within a larger cultural context. Explanation of the roles of mathematics and logic in the structure of the scientific enterprise. (Prerequisite: Open to students beyond the freshman level or by permission of the instructor.)

HUM 211 3 Credits As Demand Warrants
Introduction to Humanities I (3+0)
Integrated exploration of fundamental principles of literature, music, and visual arts.

HUM 212 3 Credits As Demand Warrants
Introduction to Humanities II (3+0)
Study of specific historical period or periods with reference to philosophy, literature, science, art and music.

HUM 220 3 Credits As Demand Warrants
Film: Asthetics, Criticism, History (3+0) h
This course examines the roles played by the city and the wilderness in contemporary imagination. The movies and books will introduce students to thought on the subject and teach them the skills of movie reviewing.

HUM 241 3 Credits As Demand Warrants
HUM 242 3 Credits As Demand Warrants
Eskimo and World Literature (3+0)
These courses examine the literature of the Eskimo peoples as well as that of other Native North Americans, Asians, and Europeans. Universal and timely themes are found and compared which communicate aspects of the human experience which are valid across cultures and across times. HUM 241 is not prerequisite to HUM 242.

HUM 329 3 Credits Alternate Fall
The Modern Media: Search for Communication (3+0) h
Review of effects and trends in mass media relating society, media, and culture. (Prerequisites: 6 credits in communication, written or oral, or permission of instructor. Next offered: 1989-90.)

HUM 332 3 Credits Alternate Spring
Varieties of Visual Expression: Art as Image and Idea (3+0) h
Discussion of the visual elements of art, principles of visual organization, the process of artistic perception and its evaluation by the viewer. (Prerequisites: 3 credits in the visual arts or permission of instructor. Next offered: 1989-90.)

HUM 342 3 Credits Alternate Spring
Synthesis in Musical Expression (3+0) h
In-depth study of one of the classical composers to show culmination of generic efforts and inter-arts relationships. (Prerequisites: MUS 123 or 124, or permission of instructor. Next offered: 1989-90.)

HUM 411 3 Credits Alternate Fall
Dimensions of Literature (3+0) h
Systematic discussion of the medium of literary creation, of the organization of literary texts and the functions of literature. (Prerequisites: 6 credits in literature courses, or permission of the instructor. Next offered: 1989-90)

HUM 492 3 Credits Alternate Spring
Senior Seminar (3+0) h
Report by the instructor on the state of the humanities at the University of Alaska and on alternate approaches elsewhere. Oral presentation and defense by the student, of their humanities project paper. (Prerequisites: Open requirements, or by permission of the instructor. Next offered 1989-90.)

Japanese

(For UAF program in Japan, see International Programs.)

JPN 101 5 Credits Fall
JPN 102 5 Credits Spring
Elementary Japanese I and II (5+0) h
Introduction to spoken and written Japanese. The student will acquire a vocabulary of approximately 1,000 words and will learn to read and write the two syllabaries, hiragana and katakana, as well as 150 kanji. The cultural dimension will be explored implicitly through language and explicitly through audiovisual materials. Courses are taught in Japanese.

JPN 201 4 Credits Fall
JPN 202 4 Credits Spring
Intermediate Japanese I and II (4+0) h
The student will learn to read and write an additional 250 kanji. Conversational ability and listening comprehension will be enhanced through the use of videotape materials. Courses are taught in Japanese. (Prerequisite: JPN 102 or equivalent.)

JPN 301 3 Credits Fall
JPN 302 3 Credits Spring
Advanced Japanese (3+0)
These courses serve to develop advanced conversational and reading skills. Topics may include; modern Japanese prose fiction; newspaper Japanese; advanced conversation through the study of common contractions and idiomatic usage in the standard Tokyo dialect; and a study of television drama series. May be repeated with different topics. (Prerequisites: JPN 202 or equivalent.)

JPN 332 3 Credits Alternate Spring
Japanese Cultural Traditions (3+0)
A study of Japanese cultural traditions as revealed in the literary, visual, and performing arts. Discussion of literature in English translation will be integrated with slide-lectures on Buddhist painting and sculpture, picture scrolls, castle decoration, woodblock prints, the tea ceremony, gardens, and the No, Kabuki, and puppet theatres. Course is taught in English. (Prerequisites: Junior standing or consent of instructor. Next offered: 1989-90.)

JPN 333 3 Credits Alternate Fall
Twentieth Century Japanese Prose Fiction (3+0)
A study of selected novels, short stories, and film scripts in translation representative of styles and themes which characterize twentieth century Japanese literature. Class discussion will invite a close analysis of each work in terms of characterization, themes, structure, style, and as an expression of social problems or intellectual issues in modern Japanese society. Course is taught in English. (Prerequisites: Junior standing or consent of instructor. Next offered: 1989-90.)

Journalism — Broadcasting

JB 101 3 Credits Fall and Spring
Introduction to Mass Communications (3+0) h
History and principles of mass communications and the role of information media in American society. Introduction to professional aspects of mass communications, including print and broadcast.

JB 102 3 Credits Fall and Spring
Broadcasting and Society (3+0) h
Principles of broadcasting as they relate to the people of the United States, including history, government involvement, and social effects.

JB 203 3 Credits Fall and Spring
Basic Photography (2+3)h
Photography fundamentals, including use of an adjustable camera, film and exposure techniques, filters, flash techniques, and an introduction to color. Black and white darkroom procedures including film processing and printing. Design and composition as they apply to photography. Students who enroll must have use of an adjustable camera. Laboratory fee: $30.00. (Course may not be used to meet major or minor requirements in Journalism-Broadcasting).

JB 204 3 Credits Fall and Spring
Basic Photojournalism (2+3)h
Photographic communications including use of an adjustable camera, film developing and printmaking, flash and design elements applied to visual communications. Students will make candid photos of people involved in news events and learn how to document news visually. Course emphasizes preparation of pictures for publication. Students who enroll must have the use of an adjustable camera. Laboratory fee: $30.00.

JB 215 3 Credits Fall and Spring
Audio Production (2+3)
Sound production for radio, television, film, and stage amplifications. Emphasis on writing, recording, control room techniques, and editing. Laboratory fee: $10.00.

JB 240 3 Credits Spring
International Communications (3+0) h
Historical development of different mass communication systems around the globe. The relationship between press philosophies and their practical implementation. Mass communication systems of selected countries as representative examples of generalized systems.

JB 301 4 Credits Fall and Spring
Basic Newsgathering and Processing (2+4) h
News reporting, writing, and editing, including news evaluation and news story structure, editing copy, writing headlines and captions, and cropping and sizing of pictures. Laboratory fee: $10.00. (Prerequisites: ENGL 111 and ENGL 211, 213, or 311, junior standing, or permission of instructor.)

JB 303 3 Credits Spring
Intermediate Photography (2+3)h
Continuation of JB 203 and JB 204 with emphasis on the picture story and freelance photography. Laboratory fee: $30.00. (Prerequisite: JB 203, JB 204 or permission of instructor.)

JB 311 3 Credits Fall and Spring
Magazine Article Writing (2+1)h
Writing articles for publication. Students repeating the course limited to six credits. (Prerequisites: JB 301 or permission of instructor.)

JB 316 3 Credits Fall
Television Productions (2+4)
Television production, floor directing, audio, camera, film chain, staging, lighting, and switching. (Prerequisites: JB 215 or permission of instructor.)

JB 317 3 Credits Spring
Broadcast Journalism (3+0)
Preparation of announcements, commercials, interviews, music continuity, special events programs, documentaries, commentaries, news, and other basic broadcast continuity. Administrative aspects included. (Prerequisite: JB 301, or permission of instructor.)

JB 320 3 Credits Spring
Journalism in Perspective (3+0) h
Present problems and trends in mass communication with emphasis on historical development, including survey of world press coverage and problems. (Prerequisite: Junior standing.)

JB 323 3 Credits Fall
Magazine Editing (3+0)
Magazine management and editing: content selection, design, editorial responsibility, and economics of publishing. (Prerequisite: Junior standing.)

JB 324 3 Credits Spring
Typography and Publication Design (2+2)
Typography, layout, and design, coupled with a study of the methods of printing production. (Prerequisite: Permission of instructor.)

JB 326 3 Credits Spring
Principles of Advertising (3+0)
(Same as BA 326)
Advertising: including strategy, media use, creation and production of advertisements and measurement of advertising effectiveness. (Prerequisite: Junior standing.)

JB 340 3 Credits Fall
Approaches to the Study of Mass Communication (3+0) s
Development of mass communication theory and research in the U.S. in the twentieth century. Relationship between theoretical assumptions and concerns of investigators, questions posed, methodological frameworks adopted, findings reached, and integration of new knowledge into the existing corpus.

JB 372 3 Credits Alternate Fall
Methods of Instructional Broadcasting (3+0)
Studio practices and procedures for producing instructional programs. Underlying educational philosophy and actual in-studio practice. (Prerequisite: JB 215 or permission of instructor. Next offered: 1989-90.)

JB 400 3 Credits Fall and Spring
Advanced Media Practicum (1+6)
Practical training in print or electronic communication. Participation at an approved publication or broadcast station required. (Prerequisite: Permission of instructor.)

JB 402 3 Credits Fall
Advanced Photography (2+3)
Special techniques in publications photography. Student concentrates on one or more areas: special lighting, special effects, freelance photography, studio photography, sports, color photography, etc. Laboratory fee: $30.00. (Prerequisite: JB 303.)

JB 407 3 Credits Spring
Programming and Production (3+0)
Programming practices at radio and TV stations, networks, cable companies and relationship of the practices with sales, audience, and government. (Prerequisites: JB 215 and JB 316 or permission of instructor.)

JB 411 3 Credits Fall and Spring
Advanced Writing for Publication (3+0)h
Writing advanced prose for publication in books or magazines. May be repeated for credit with permission of instructor. (Prerequisite: JB 311, or permission of instructor.)

JB 413 3 Credits Fall
Mass Media Law and Regulation (3+0)s
Common law, statutory law and administrative law that affects the mass media, including libel, copyright, access to the media, constitutional problems, privacy, shield laws, and broadcast regulations. (Prerequisite: JB 301, or permission of instructor.)

JB 415 3 Credits Fall
News/Documentary Television Production (2+2)
Electronic news gathering, electronic field production using remote videotape equipment. Develop skills in scriptwriting, budgets, location sound recording, interview techniques, editing, videography, and other aspects of field production. (Prerequisites: JB 204 and JB 215.)

JB 416 3 Credits Alternate Fall
Advanced Broadcast Production (1+6)
Advanced broadcast production in either TV or radio. Each student produces, directs, and writes productions of a quality to air on either KUAC-TV or KUAC-FM. Students repeating the course limited to a total of six credits. (Prerequisites: JB 215, JB 316, or permission of instructor. Next offered: 1989-90.)

JB 424 3 Credits Spring
Magazine Production (2+3)
Magazine publication experience, including writing, photography, editing, design, layout, advertising, and circulation. Students edit and produce *Alaska Today* magazine, under journalism faculty supervision. (Admission by arrangement; editorial positions open to students who have completed JB 323.)

JB 433 3 Credits Fall
Public Relations (3+0) h
Techniques, causes and consequences of influencing public opinion; propaganda, mass communication and public relations as instruments of economic, political, and social change. (Prerequisites: JB 301 or permission of instructor.)

JB 444 4 Credits Fall and Spring
Advanced Newsgathering and Processing (2+4)h
Advanced reporting, writing and editing of news with emphasis on public affairs. Develops sophisticated skills in copy editing, headline writing, news judgment and positioning, page layout and use of pictures. Laboratory fee: $10.00. (Prerequisites: JB 301, junior standing, or permission of instructor.)

Justice

JUST 110 3 Credits Fall and Spring
Introduction to Justice (3+0) s
Survey of the structure and process of the agencies of criminal justice. Includes introduction to criminology, criminal law, and the juvenile justice system.

JUST 221 3 Credits Spring
Justice Organization and Management (3+0)
Survey of organizational structure and management styles of criminal justice agencies. Includes application and critique of major theoretical models.

JUST 222 3 Credits Fall
Research Methods (3+0) s
(Same as PS 222)
Application of social science research methods to solving scientific and non-scientific questions arising in Justice or Political Science. Basic methods include experimentation and survey research. (Prerequisite: JUST 110.)

JUST 250 3 Credits Fall
History of the Law (3+0) s
(Same as PS 250)
An introduction to the history of the law in Western civilization with an emphasis on the development of Anglo-American law in America.

JUST 251 3 Credits Spring
Criminology (3+0) s
The study of the major areas of deviant behavior and its relationships to society, law, and law enforcement, including the theories of crime causation. (Prerequisites: SOC 101.)

JUST 258 3 Credits Alternate Fall
Juveniles and the Law (3+0) s
Survey of the structure and process of the juvenile justice system and the major theories of juvenile delinquency. (Next offered: 1989-90.)

JUST 259 3 Credits Alternate Spring
Introduction to Public Administration (3+0) s
(Same as PS 212)
Theories and practices of public administration, especially as applied to federal agencies. Study of organization planning, and decision making in implementing public policy. (Next offered: 1990-91.)

JUST 303 3 Credits Fall
Introduction to Legal Processes (3+0)
(Same as PS 303)
The purpose and functions of law in society, with a focus on legal reasoning and decisionmaking in civil cases. (Prerequisites: PS 101, JUST 110.)

JUST 310 3 Credits Spring
Principles of Corrections (3+0) s
An introduction to adult institutions, community-based programs, and theories of incarceration. Correctional programs are examined. (Prerequisite: JUST 251 or permission of instructor.)

JUST 320 Variable Credit Fall and Spring
Practicum
A research oriented course directed at the resolution of a specific problem within an agency of the criminal justice system. (May be repeated to a maximum of 6 credits.)

JUST 330 3 Credits Spring
Law and Society (3+0) s
(Same as PS 330)
Study of moral issues related to the proper reach, extent, and enforcement of the law. (Prerequisites: PS 101 or JUST 110.)

JUST 352 3 Credits Fall
Criminal Law (3+0)
A study of elements, purposes, and functions of the substantive criminal law with emphasis upon historical and philosophical concepts. (Prerequisite: JUST 110.)

JUST 354 3 Credits Spring
Procedural Law (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. (Prerequisite: JUST 110.)

JUST 404 3 Credits Spring
Introduction to Legal Research and Writing (3+0)
(Same as PS 404)
The methods of legal research and preparation of legal materials, to the resources of law libraries and the techniques of presenting issues in legal form. (Prerequisites: PS 101, JUST 110, JUST/PS 303.)

JUST 452 3 Credits Spring
Comparative Criminal Justice (3+0) s
Study of police, courts, and corrections in selected countries throughout the world. Includes Soviet Union, Japan, France and others. (Prerequisites: JUST 110, senior standing or permission of instructor.)

JUST 460 3 Credits Fall
Justice Processes (3+0) s
Major concepts of the structure and process of criminal justice revisited with emphasis on current issues. (Prerequisite: JUST 110, JUST 251, or senior standing.)

JUST 475 3 Credits Fall and Spring
Internship
On site experience in criminal justice agencies. (Prerequisite: Permission of director of intern program.)

JUST 492 Variable Credit Fall and Spring
Seminar
Various topics of current interest and importance to the justice major will be presented. Topics will be announced prior to each offering. (Prerequisites: JUST 110, senior standing or permission of instructor.)

Korean

KORE 101 3 Credits Fall
KORE 102 3 Credits Spring
Elementary Korean I and II (3+0) h
Introduction to the language and culture: development of competence and performance in the language through understanding, recognition and use of linguistic structures, increasing emphasis on listening comprehension and speaking, exploration of the cultural dimension, implicitly through language. (Prerequisite: For KORE 102, KORE 101.)

KORE 201 3 Credits Fall
KORE 202 3 Credits Spring
Intermediate Korean I and II (3+0) h
Continuation of KORE 102. Increasing emphasis on reading ability and culture material. Conducted in Korean. (Prerequisite: KORE 102 or equivalent.)

Library Science

LS 101 1 Credit Fall and 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. After one introductory class meeting no further class sessions are held; the student works at his individual rate and on his own time schedule.

LS 307 1 Credit Spring
Information Sources for Educators (1+0)
A self-paced study course providing a survey of major library reference sources and computer databases for education/education related majors. Class meets for an introductory session and a computer literatures search demonstration; otherwise, the student works at his individual rate and on his own time schedule.

LS 309 1 Credit As Demand Warrants
Information Resources (1+0)
Information organization, scholarly communication and research reporting for a specific discipline, including major disciplinary reference sources and bibliographic databases in the disciplines. This course should be taken the semester before or during which the student takes an upper division course requiring a term paper. Course may be repeated when these is a change in discipline. (Prerequisite: Junior standing in specific discipline or permission of the instructor. LS 101 recommended.)

LS 382 3 Credits Alternate Spring
History of Circumpolar Research (3+0) s
(Same as HIST 382) Explores the systematic development of knowledge of the circumpolar northern regions in all fields. Studies the history of arctic and sub-arctic sciences such as geological, biological and atmospheric sciences and the study of people through anthropology, ethnography, linguistics and history. Cold regions engineering and technology as well as research in education, government and law are covered. The literature and source material for a study of these fields will be analyzed. (Prerequisite: HIST 110 or 115 or ANTH 242 or BIOL 104 or permission of the instructor. Next offered: 1989-90.)

Linguistics

LING 101 3 Credits Fall
Nature of Language (3+0) h
The study of language: systematic analysis of human language and description of its grammatical structure, distribution, and diversity.

LING 262 3 Credits As Demand Warrants
Methods of Teaching English as a Second Language and Standard English as a Second Dialect (3+0)
(Same as ED 262)
This course is an introduction to second language teaching methods, using English as a Second Language (ESL) and Standard English as a Second Dialect (SESD) for the examples. The class covers basic underlying assumptions about the nature of language, language learning, language teaching, characteristics of good language learners, optimal language learning environments, and what affect they have on how we teach. The different roles of the second language teacher and their appropriateness is covered. Several specific language teaching methods, techniques and activities consistent with these methods, and adaptation of these methods to the needs of western Alaskan classrooms is also presented. (Prerequisite: Classroom experience.)

LING 216 3 Credits Alternate Fall
Languages of the World (3+0) h
A comprehensive survey of the world's languages — both past and present. Topics to be covered include genetic relationships among languages, linguistic change, language universals, language classification, and language families, as well as the interaction of culture and language. (Next offered: 1989-90.)

LING 303 3 Credits As Demand Warrants
Language and Literacy Development (3+0)
(Same as ED 303)
Principles, procedures, and materials for enhancing the language development of young children. (Prerequisite: PSY 240.)

LING 318 3 Credits Alternate Spring
Introduction to Phonetics and Phonology (3+0)
An introduction to scientific study of human speech sounds, the mechanism of their production, and the sound systems of languages. (Prerequisites: Upper division standing or permission of instructor. Next offered: 1989-90.)

LING 320 3 Credits Alternate Spring
Intro. to Syntactic Theory (3+0) h
An introduction to the study of the principles and processes of sentence construction in language. (Prerequisites: LING 101 or its equivalent, at least junior standing or permission of the instructor. Next offered: 1989-90.)

LING 350 3 Credits Alternate Fall
Historical Linguistics (3+0)
Introduction to comparative and historical linguistics: methods of linguistic reconstruction, historical change, genetic relationships, dialectology. Includes Indo-European and Alaskan languages. (Prerequisite: LING 318. Next offered: 1989-90.)

LING 410 3 Credits Alternate Fall
Theory and Methods of Second Language Teaching (3+0)
Theory and practice of teaching a second language, including methodological approaches, second language acquisition theory, materials, and testing. (Next offered: 1989-90.)

LING 450 3 Credits Every Third Spring
Language Policy and Planning (3+0)
Consideration of minority languages, including Alaskan Native Languages, in light of their histories, current status, and factors affecting future maintenance. (Next offered: 1990-91.)

LING 482 3 Credits Every Third Year
Seminar in Linguistics (3+0)
Current issues in various subfields of linguistics including semantics and pragmatics, discourse analysis, bilingualism, lexicography, language philosophy, and issues within a particular language or language group, e.g. Eskimo phonology, Athabaskan morphology. May be repeated once. (Next offered: 1990-91.)

Marine Science and Limnology

MSL 111 3 Credits Juneau Alternate Fall
The Oceans (3+0) n Fairbanks Spring
An introductory examination of the classic disciplines of ocean science beginning with important definitions and a general history of oceanography. Emphasis is on descriptive biological, physical, chemical and geological marine science. Additional topics of special interest including scuba, demonstrations of marine research instrumentation, and films of current oceanographic topics such as coastal upwelling and polar oceanography will supplement the lecture. (Next offered Juneau: 1989-90.)

MSL 411 3 Credits Juneau As Demand Warrants
Fairbanks Alternate Fall
Current Topics in Oceanographic Research (3+0)
Study of current oceanographic research problems from biology, chemistry, geology and physics. Topics will include sea floor hydrothermal vents and their indigenous communities, manganese nodules, tsunami prediction, radioisotopes in the sea, Bering Sea productivity, and the role of the ocean in global warming due to fossil fuel carbon dioxide. (Prerequisites: Four semesters of natural sciences at 100 level or above or permission of the instructor. Next offered Fairbanks: 1989-90.)

MSL 435 3 Credits Alternate Fall
Acoustical Oceanography (3+0)
Principles and applications of underwater sound in solving oceanographic problems related to chemistry, physics, geology and biology, including hydroacoustical methods, acoustical phenomena, bioacoustics and fisheries acoustics, environmental noise and signal processing. (Prerequisites: college physics and calculus. Next offered: 1989-90.)

MSL 610 3 Credits Alternate Spring
Marine Biology (3+0)

MSL 611 5 Credits Alternate Summer
Field Problems in Marine Biology (0+Arr)

MSL 615 2 Credits Alternate Fall
Physiology of Marine Organisms (2+0)

MSL 620 4 Credits Fall
Physical Oceanography (3+3)

MSL 621 3 Credits Alternate Fall
Polar Marine Science (3+0)

MSL 622 3 Credits Alternate Fall
Satellite Oceanography (3+0)

MSL 625 2 Credits Spring
Shipboard Techniques (1+3)

MSL 629 3 Credits Alternate Fall
Methods of Numerical Simulation in Fluids and Plasma (3+0)
(Same as PHYS 629)

MSL 629L 1 Credit Alternate Fall
Methods of Numerical Simulation in Fluids and Plasma Lab (0+3)

MSL 630 3 Credits Spring
Geological Oceanography (3+0)

MSL 640 3 Credits Alternate Spring
Fisheries Oceanography (3+0)

MSL 650 3 Credits Fall
Biological Oceanography (3+0)

MSL 652 3 Credits Alternate Spring
Marine Ecosystems (3+0)

MSL 660 3 Credits Spring
Chemical Oceanography (3+0)
(Same as CHEM 660)

MSL 661 2 Credits Alternate Spring
Isotope Techniques for Aquatic Sciences (2+0)

MSL 662 3 Credits Alternate Spring
Fjord Oceanography (3+0)

MSL 665 3 Credits Alternate Spring
Microbial Biochemistry (2+3)

MSL 670 2 Credits Alternate Fall
Nutrient Dynamics (2+0)

MSL 680 3 Credits Alternate Spring
Physical-Chemical Limnology (3+0)

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.

DEVM 050 3 Credits As Demand Warrants
Basic College Mathematics (3+0)
Operations with whole numbers, fractions, decimals and signed numbers. Percents and rations. Evaluating algebraic expressions. Introduction to geometric figures. Metric system.

DEVM 060 3 Credits As Demand Warrants
Elementary Algebra (3+0)
First year high school algebra. Evaluating and simplifying algebraic expressions, solving first degree equations and inequalities, integral exponents, polynomials, factoring, rational expressions. (Prerequisite: DEVM 050 or placement.)

DEVM 065 Variable Credit As Demand Warrants
Mathematics Lab
This course is an individual tutorial lab. Course content is selected according to the needs of the individual student from the topics covered in DevM. 050 and DevM. 606. (Prerequisite: placement.)

DEVM 070 3 Credits As Demand Warrants
Intermediate Algebra (3+0)
Second year high school algebra. Operations with rational functions, radicals, rational exponents, complex numbers, quadratic equations and inequalities, Cartesian coordinate system and graphing, systems of equations, determinants and logarithms. (Prerequisite: DEVM 060 or placement.)

MATH 080 3 Credits As Demand Warrants
Mathematics for the Trades (3+0)
Designed for students in diesel and welding areas. Topics from algebra, geometry and trigonometry are applied to Voc-Tech problems.

MATH 107 3 Credits Fall and Spring
Elementary Functions (3+0) m
A study of algebraic, logarithmic, and exponential functions, together with selected topics from algebra. Note: No credit may be earned for more than one of MATH 107, MATH 161, or MATH 171. (Prerequisite: Two years of high school algebra and MATH 107 placement or higher.)

MATH 108 2-3 Credits Fall and Spring
Trigonometry (2-3+0) m
A study of the trigonometric functions. (Prerequisite: MATH 107 or concurrent registration in MATH 107.)

MATH 109 3 Credits As Demand Warrants
Analytic Geometry (3+0) m
Rectangular coordinate system, the straight line, conic sections, transcendental curves, polar coordinates, parametric equations, and solid analytic geometry. (Prerequisite: Two years of high school algebra.)

MATH 110 3 Credits Fall and Spring
Mathematics of Finance (3+0) m
Simple and compound interest, discount, annuities, amortization, sinking funds, depreciation, and capitalization. (Prerequisite: Two years high school mathematics, including at least one year of algebra.)

MATH 131 3 Credits Fall
MATH 132 3 Credits Spring
Concepts of Mathematics 3(3+0) m
A study of mathematical thought and history designed for students with a limited mathematical background. Mathematical reasoning rather then formal manipulation is emphasized. Topics may be chosen from number theory, topology, set theory, geometry, algebra and analysis. Note: These courses do not provide technical preparation for, nor are they prerequisites for, any other college level mathematics courses. (Prerequisite for MATH 131 - Two years high school mathematics, including at least one year of algebra; for MATH 132: MATH 131 or consent of instructor.)

MATH 161 3 Credits Fall and Spring
Algebra for Business and Economics (3+0) m
Functions of one and several variables studied with special attention given to linear, polynomial, rational, logarithmic, and exponential relationships. Geometric progressions as applied to compound interest and present value. Linear systems of equations and inequalities. All applications are from the fields of economics and business. Note: No credit may be earned for more than one of MATH 107, MATH 161, or MATH 171. (Prerequisites: Two years of high school algebra and MATH 161 placement or higher.)

MATH 162 4 Credits Fall and Spring
Calculus for Business and Economics (4+0) m
Ordinary and partial derivatives. Maxima and minima problems, including the use of Lagrange multipliers. A brief introduction to the integral of a function of one variable. Applications include marginal cost, productivity, revenue, point elasticity of demand, competitive/complementary products, consumer's surplus, etc. Note: No credit may be earned for more than one of Math 162, Math 200, or Math 272. (Prerequisites: MATH 161.)

MATH 171 3 Credits Spring
Mathematics for Life Sciences (3+0) m
Algebraic, trigonometric, exponential, and logarithmic functions with applications to problems arising in the life sciences. Note: No credit may be earned for more than one of MATH 107, MATH 161, or MATH 171. (Prerequisite: Two years of high school algebra and MATH 171 placement or higher.)

MATH 181 3 Credits
Finite Math for Business (3+0)
Topics used to solve business and economic problems including matrix theory, linear programming, simplex method, counting techniques and probability distributions. (Prerequisite: DEVM 060 or placement.)

MATH 200 4 Credits Fall and Spring
MATH 201 4 Credits Fall and Spring
MATH 202 4 Credits Fall and Spring
Calculus (4+0) m
Techniques and application of differential and integral calculus, vector analysis, partial derivatives, multiple integrals, and infinite series. Note: No credit may be earned for more than one of MATH 162, MATH 200 or MATH 272. (Prerequisites: MATH 107-108.)

MATH 203 4 Credits Fall
Finite Math (4+0) m
Topics covered include: symbolic logic, partitions, binomial and multinomial theorems, probability, finite stochastic processes, linear algebra, Markov chains, linear programming, and game theory. (Prerequisite: MATH 162 or 272 or 200.)

MATH 205 3 Credits Fall
Mathematics for Elementary School Teachers I (3+1) m
Elementary set theory, numeration systems, and algorithms of arithmetic, divisors, multiples, integers, introduction to rational numbers. (Prerequisites: two years high school mathematics, including at least one year of algebra. Restricted to B.Ed. students; others by permission of instructor.)

MATH 206 3 Credits Spring
Mathematics for Elementary School Teachers II (3+1) m
A continuation of MATH 205. Real number systems and sub-systems, logic, informal geometry, metric system, probability, and statistics. (Prerequisite: MATH 205.)

MATH 210 1 Credit Fall and Spring
Calculus and the Computer (1+0) m
Computer implementation of numerical methods of elementary calculus. Functions, limits, roots, differentiation, maxmin, integration, and differential equations. Emphasis is on problem analysis and interpretation of results. (Prerequisite: Concurrent registration in MATH 162 or 200 or 272 or completion of one of these courses.)

MATH 211 1 Credit Spring and Fall
Linear Algebra and the Computer (1+0) m
Computer implementation of numerical methods of elementary linear algebra. Solution of systems of linear equations, matrix inversion, determinants, characteristic roots, linear optimization, and iterative methods. (Prerequisite: MATH 210.)

MATH 215 2 Credits Spring
Introduction to Mathematical Proofs (2+0) m
Emphasis on proof techniques with topics including logic, sets, relations, equivalence induction, number theory, graph theory and congruence classes. In addition, a rigorous treatment of topics from calculus could be given. (Prerequisites: MATH 200, 201 or concurrent with 201 or permission of instructor.)

MATH 272 3 Credits Fall
Calculus for Life Sciences (3+0) m
Differentiation and integration with applications to the life sciences. Note: No credit may be earned for more than one of MATH 162, MATH 200, or MATH 272. (Prerequisites: MATH 171 or MATH 107 and MATH 108.)

MATH 273 3 Credits Spring
Calculus for Life Sciences (3+0) m
Applications of integration. Differential and difference equations as models of real life processes. Partial differentiation. (Prerequisite: MATH 272.)

MATH 302 3 Credits Fall and Spring
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, and applications. (Prerequisite: MATH 202.)

MATH 305 3 Credits As Demand Warrants
Geometry (3+0)
Topics selected from such fields as Euclidean and non-Euclidean plane geometry, affine geometry, projective geometry, and topology. (Prerequisite: MATH 202 or permission of instructor.)

MATH 306 3 Credits Alternate Spring
Introduction to the History and Philosophy of Mathematics (3+0)
A concise survey of the history and philosophy of mathematics for students of mathematics, science, history and philosophy as well as a detailed study of certain important periods of that history as examined by such thinkers as Plato, B. Russell, D. Hilbert, L.E.J. Brouwer and K. Godel. (Prerequisites: MATH 202 or permission of instructor. Next offered: 1989-90.)

MATH 307 3 Credits Fall
Discrete Mathematics (3+0)
Logic, counting, sets and functions, recurrence relations graphs and trees. Additional topics may be chosen from probability theory. (Prerequisites: MATH 201 or 203 or permission of instructor.)

MATH 308 3 Credits Spring
Abstract Algebra (3+0)
Theory of groups, rings and fields. (Prerequisites: MATH 215 or permission of instructor. Recommended: MATH 307 and/or MATH 314.)

MATH 310 3 Credits Fall
Numerical Analysis (3+0)
Direct and iterative solutions of systems of equations, interpolation, numerical differentiation and integration, numerical solutions of ordinary differential equations, and error analysis. (Prerequisite: MATH 302 or permission of instructor. A knowledge of FORTRAN or BASIC is desirable.)

MATH 314 3 Credits Spring
Linear Algebra (3+0)
Linear equations, finite dimensional vector spaces, matrices, determinants, linear transformations, and characteristic values. Inner product spaces. (Prerequisite: MATH 202 or MATH 211.)

MATH 371 3 Credits As Demand Warrants
Probability (3+0)
Probability spaces, conditional probability, random variables, continuous and discrete distributions, expectation, moments, moment generating functions, and characteristic functions. (Prerequisite: MATH 202.)

MATH 401 3 Credits Fall
MATH 402 3 Credits Spring
Advanced Calculus (3+0)
A rigorous treatment of one and several dimensional calculus. Includes the study of mappings from n-space and their continuity, differentiability and integrability properties as well as sequences and series. (Prerequisites: MATH 215 or 202 for MATH 401; MATH 401 for MATH 402.)

MATH 404 3 Credits As Demand Warrants
Topology (3+0)
Introduction to topology, set theory, open sets, compactness, connectedness, product spaces, metric spaces and continua. (Prerequisites: MATH 215 and MATH 202. Recommended: MATH 314 and/or MATH 308.)

MATH 408 3 Credits As Demand Warrants
Mathematical Statistics (3+0)
Distribution of random variables and functions of random variables, interval estimation, point estimation, sufficient statistics, order statistics, and test of hypotheses including various criteria for tests. (Prerequisites: MATH 371 and STAT 301.)

MATH 421 4 Credits Fall
Applied Analysis I (4+0)
Vector calculus, including gradient, divergence, and curl in orthogonal curvilinear coordinates, ordinary and partial differential equations and boundary value problems, and Fourier series and integrals. (Prerequisites: MATH 302 or concurrent enrollment in MATH 302.)

MATH 422 4 Credits Spring
Applied Analysis II (4+0)
Topics in multi-variate calculus, including boundary value problems and partial differential equations of mathematical physics complex functions, including series, integrals, residues, conformal mapping, and potential theory. (Prerequisite: MATH 421.)

MATH 423 3 Credits As Demand Warrants
Applied Mathematics (3+0)
Topics to be determined at the time of registration to fit the needs of the students. (Prerequisite: Senior standing or permission of instructor.)

MATH 460 3 Credits Fall
Mathematical Modeling (3+0)
Analysis, construction, and interpretation of mathematical models. Applications to the physical, biological, and social sciences. Topics will be selected from combinatorics, probability, statistics, perturbation, numerical analysis, and differential equations. Students will develop a modeling project. (Prerequisites: STAT 301, MATH 201, MATH 211.)

MATH 603 3 Credits Fall
Real and Complex Analysis I (3+0)

MATH 604 3 Credits Spring
Real and Complex Analysis II (3+0)

MATH 608 3 Credits As Demand Warrants
Partial Differential Equations (3+0)

MATH 611 3 Credits Alternate Fall
MATH 612 3 Credits Alternate Spring
Mathematical Physics (3+0)
(Same as PHYS 611, 612)

MATH 615 3 Credits Alternate Spring
Applied Numerical Analysis (3+0)

MATH 621 3 Credits Alternate Fall
Advanced Applied Analysis (3+0)

MATH 622 3 Credits As Demand Warrants
Topics in Applied Analysis (3+0)

MATH 630 3 Credits Fall
Advanced Linear Algebra and Its Applications (3+0)

MATH 631 3 Credits Spring
Theory of Modern Algebra (3+0)

MATH 651 3 Credits Every third year
Topology (3+0)

MATH 660 3 Credits Alternate Spring
Advanced Mathematical Modeling (3+0)

MATH 661 3 Credits As Demand Warrants
Optimization (3+0)
(Same as CS 661)

MATH 663 3 Credits Alternate Spring
Applied Combinatorics and Graph Theory (3+0)

Mechanical Engineering

ME 150 1 Credit Fall
Aerodynamics for Pilots (1+1)
Nature of the atmosphere, elementary airfoil 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.)

ME 302 4 Credits Spring
Mechanical Design (3+3)
Kinematics and dynamics of mechanisms. Analysis and design of displacements, velocities, accelerations, and forces in linkages, cams, and gear systems by analytical, experimental, and computer methods. (Prerequisites: ES 208 and ES 210.)

ME 313 3 Credits Spring
Mechanical Engineering Thermodynamics (3+0)
Continuation of ES 346 including power and refrigeration cycles (Rankine, Brayton, Otto, and Diesel), compressible flow (isentropic, shock waves, and flow in ducts with friction), combustion and gas vapor mixtures. (Prerequisites: ES 341 and ES 346).

ME 321 3 Credits Fall
Industrial Processes (2+3)
Introductory course covering a wide spectrum of manufacturing processes used in modern industry, primary and secondary manufacturing processes, casting, hot and cold forming, machining, welding, and mass production tools and techniques as related to economic and efficient product design. Laboratory fee: $25.00.

ME 403 4 Credits Fall
Mechanical Design II (3+2)
Design and analysis of machines by analytical, experimental and computer methods. Identification of requirements and conceptual design of mechanical systems, detailed design of components, strength, life, reliability, and cost analysis. Laboratory fee: $15.00. (Prerequisites: ME 302 and ES 331.)

ME 404 3 Credits Spring
Stress Analysis (3+0)
Analysis of the strength, stability and rigidity of machine components by analytical and computer methods. (Prerequisites: ES 331, MATH 302, ES 201.)

ME 408 3 Credits Spring
Dynamics of Systems (2+2)
Response of mechanical, fluid, and thermal systems to internal, external, and control forces. Free and forced vibration, random vibration, self-excited vibration, control systems, and stability criteria. Nonlinear systems. (Prerequisites: ES 201 and ES 301.)

ME 409 3 Credits Spring
Controls (2+2)
Analysis and design of mechanical, electrical, and human control systems. (Prerequisites: ES 201, ES 301.)

ME 414 3 Credits Fall
Thermal Systems Design (3+0)
Introduction to the design of power and space conditioning systems, energy conversion, heating, ventilating, air conditioning, total energy systems, and introduction to thermal system simulation and optimization. (Prerequisite: ES 346.)

ME 415 2 Credits Fall
Thermal Systems Laboratory (1+3)
Testing and evaluation of components and energy systems such as pumps, fans, engines, heat exchangers, refrigerators, and heating/power plants. Laboratory fee: $15.00. (Prerequisites: ES 341 and ME 313.)

ME 416 3 Credits Fall
Design of Mechanical Equipment for the Petroleum Industry (3+0)
Design, selection, and operation of mechanical equipment used in the production and processing of crude oil and gas. Instrumentation and control systems used with the mechanical equipment. (Prerequisites: ES 341 and ES 346.)

ME 441 3 Credits Spring
Heat and Mass Transfer (3+0)
Fundamental concepts of heat and mass transfer including steady state and transient conduction, laminar and turbulent free and forced convection, evaporation, condensation, ice and frost formation, black body and real surface radiation, and heat exchangers. (Prerequisite: ES 346.)

ME 450 3 Credits As Demand Warrants
Theory of Flight (3+0)
Airfoil theory in subsonic and supersonic flow. Propulsion systems, stability and performance of aircraft. (Prerequisite: Consent of instructor.)

ME 464 3 Credits Spring
Corrosion Engineering (3+0)
Principles and forms of corrosion and factors that affect it. Methods of testing and measurement, control and prevention are examined. (Prerequisite: Senior standing in engineering.)

ME 487 3 Credits Spring
Design Project
A real or simulated engineering design project selected jointly by student and instructor. Emphasis on design of practical mechanical engineering systems and/or components which integrate students' engineering knowledge and skills. (Prerequisite: Senior standing.)

ME 601 3 Credits Alternate Fall
Finite Element Analysis in Enginering (3+0)

ME 604 3 Credits Alternate Spring
Experimental Mechanics (2+3)

ME 617 3 Credits As Demand Warrants
Power Analysis (3+0)

ME 631 3 Credits Alternate Fall
Advanced Mechanics of Materials (3+0)

ME 634 3 Credits Alternate Spring
Advanced Materials Engineering (3+0)

ME 641 3 Credits Alternate Spring
Advanced Fluid Mechanics (3+0)

ME 642 3 Credits Alternate Spring
Advanced Heat Transfer (3+0)

ME 685 3 Credits Alternate Spring
Arctic Heat and Mass Transfer (3+0)

ME 687 3 Credits Alternate Spring
Arctic Materials Engineering (3+0)

Mechanics — Diesel/Heavy Equipment

MECN 101 7 Credits As Demand Warrants
Heavy Equipment I
Introduction to suspension systems, wheel bearings, brakes, air systems, clutches, transmissions (auto. and mech.), driveshafts, and differentials. Topics include disassembly, inspection, and assembly of components, use of tools and instruments, use of fixtures, and shop safety. Materials fee: $100.00.

MECN 102 7 Credits As Demand Warrants
Heavy Equipment II
Introduction to electrical and hydraulic systems, and crawler tractor undercarriage final drive and steering clutches. Materials fee: $100.00.

MECN 112 1 Credit As Demand Warrants
Basic Auto Maintenance (1+0)
This course, designed for the person without mechanical experience, will cover basic automobile system functions, owner maintenance of electrical, cooling, and fuel systems, auto lubricants and fluids, tires and wheels, tune-ups, and cold weather maintenance and operation. Materials fee: $10.00.

Military Science

MILS 100, 200 1 Credit Fall and Spring
Outdoor Skills Laboratory (0+2)
Introduction to the fundamentals of various outdoor skills such as mountaineering, orienteering, marksmanship, arctic survival, skiing, and snowshoeing. Emphasis is on practical work. The same skills are not taught both semesters. (Corequisite: Concurrent registration in another basic military science course [111, 112, 201 or 202])

MILS 111 2 Credits Fall
U.S. Army and Society I (2+0)
Survey and analysis of the origin, development, organization and function of the American military. Focus is on the structure and purpose of the U.S. Army and ROTC program and the civilian-military relationship. An introduction to chain of command and small unit organization is provided to include characteristics of officers and their relation to subordinate leaders and enlisted men and women.

MILS 112 2 Credits Spring
U.S. Army and Society II (2+0)
Survey of human behavior and leadership in the organizational context of the army and military environment. The role of the soldier, military training, discipline, ethics, and professionalism are presented. Students are introduced to behavioral dimensions and management techniques used by successful officer-leaders.

MILS 113 2 Credits Spring
Map Reading and Orienteering (2+0)
Introduction to military and civilian topographical maps and their related informational content, use of the lensatic compass and map as navigational instruments. Practical exercises in orienteering complement academic instruction.

MILS 201 2 Credits Fall
U.S. Defense and World Affairs (2+0) s
A study of current world events and how they affect the military leader and defense structure. Historical as well as political events are studied to learn their relationships to the decision making processes. Geography is considered as an influential factor affecting the economic base of a nation, and both are considered in terms of socio-political influence on military thought. Current military strengths and weaknesses of power groups are discussed and analyzed.

MILS 202 2 Credits Spring
Communications Arts for the Military Leader (2+0)
A study of the principles of public speaking and instructional techniques. Emphasis is upon the development of functional skills through rehearsed and unrehearsed presentations. Instructional techniques, to include the use of audio-visual aids, provides intensive practice in developing lesson plans and skill in presentation.

MILS 250 3 Credits Summer
Basic Camp
Six week practical field work to prepare students who did not take basic course for entrance into the advanced course. Camp prepares student in basic military skills and leadership experience. (Prerequisite: At least two years of schooling remaining upon completion of camp. Admission by arrangement with professor of military science.)

MILS 300, 400 1 Credit Fall and Spring
Outdoor Skills Laboratory (0+2)
Advanced training in mountaineering, orienteering, marksmanship, arctic survival, skiing and snowshoeing. Students assist in giving instruction and in organizing and managing the lab. Emphasis is on practical work. May be repeated for a maximum of two credits at each level. (Prerequisite: Junior or senior standing in military science.)

MILS 301 3 Credits Spring
Theory and Dynamics of Tactical Operations (3+1)
Detailed examination of the concepts, principles, and techniques applicable to the current doctrine of tactical operations. The course emphasizes the role of the small unit leader in planning, directing, and controlling the efforts of individuals and small units to accomplish offensive, defensive, and specialized combat operations. Practical application of performance objectives and the integration of support functions are emphasized. Laboratory consists of practical leadership development. (Prerequisites: Junior standing in MILS or permission of instructor.)

MILS 303 3 Credits Fall
Advanced Leadership (3+1)
(Same as B.A. 303)
An interdisciplinary approach to the study of effective leadership in the contemporary environment. Analysis of individual skills, emphasizing a behavioral approach to effective decision making. For ROTC cadets, class and laboratory includes preparation for advanced camp (MILS 350). (Prerequisites: Junior standing in MILS or permission of instructor.)

MILS 350 3 Credits Summer
Advanced Camp
Six week practical field work for students enrolled in the advanced course. Camp is structured as a leadership workshop allowing students to utilize leadership skills in a variety of situations in a military environment. (Prerequisite: Must be enrolled as an advanced course cadet and have completed MS III.)

MILS 351 2 Credits Summer
Cadet Troop Leadership Training
Three week full-time leadership training and development. Serving in leadership positions with the Active Army. Applying leadership and management principles in real life junior officer situations/positions in a military environment. (Prerequisite: Must be enrolled as an advanced course cadet and completed MS III and Advanced Camp, MILS 350.)

MILS 401 3 Credits Fall
Seminar on Tactical Operations (3+1) s
A study of the conduct of tactical operations from the time of Hannibal to the present. The course is designed to introduce the student to a wide variety of historical examples where application or violation of sound tactical principles, or various styles and types of leadership have produced success or failure. Laboratory consists of practical leadership roles and seminars. (Prerequisites: Senior standing in Mils. or permission of instructor.)

MILS 402 3 Credits Spring
Seminar in Leadership and Management (3+0)
A study and overview of management principles, management practices, and military justice. Emphasis is on the review of management principles and skills through advanced readings and case studies. Students will receive an orientation on the various administrative, training, logistical, and maintenance tools used in the military. Class includes preparation for commissioning. (Prerequisites: Senior standing in MILS or permission of instructor.)

Mineral Preparation Engineering

MPR 304 3 Credits Alternate Fall
Introduction to Metallurgy (3+0)
Definitions and principles of basic science and engineering principles as applied to process and adaptive metallurgy. (Prerequisites: CHEM 211, PHYS 212. Next offered: 1989-90.)

MPR 313 3 Credits Alternate 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 beneficiations. (Prerequisite: Junior standing or permission of the instructor. Next offered: 1989-90.)

MPR 314 3 Credits Alternate Spring
Unit Preparation Processes (1+6)
Liberation and concentration by gravity, electro-magnetic, and electrostatic methods. Economic analysis and flowsheets for different ores are developed. (Prerequisite: MPR 313. Next offered: 1989-90.)

MPR 410 3 Credits Alternate Fall
Surface Materials Handling Systems (2+3)
The techniques and design of systems to move ore, concentrates, and waste materials in mining and milling operation. (Prerequisite: Senior standing or permission of the instructor. Next offered: 1989-90.)

MPR 418 3 Credits Spring
Emission Spectroscopy, X-Ray Spectroscopy, and Atomic Absorption (2+3)
Can be taken for any combination of parts A, B, C as demand warrants. (Admission by special arrangement.)

MPR 418A — Theory and application of emission spectrography: two one-hour classes and one three-hour lab per week for five weeks. One credit.

MPR 418B — Theory and application of x-ray spectography and diffractometer: two one-hour classes and one three-hour lab per week for five weeks. One credit.

MPR 418C — Theory and application of atomic absorption spectrophotometry: two one-hour classes and one three-hour lab per week for five weeks. One credit.

MPR 433 3 Credits Alternate Fall
Coal Preparation (2+3)
Units operations, flowsheets, washability characteristics, and control by sink-float methods for coal preparation plants. Market requirements and economics of preparation. (Prerequisite: MPR 313. Next offered: 1989-90.)

MPR 601 3 Credits Spring
Froth Flotation (2+3)

MPR 606 3 Credits Spring
Plant Design (1+6)

MPR 684 3 Credits Fall
Mineral Preparation Research (1+6)

MPR 688 1 Credit Fall
Graduate Seminar I (1+0)
(Same as MIN 688)

Mining Engineering

MIN 101 3 Credits Fall
Minerals, Man and the Environment (3+0)
A general survey of the impact of the mineral industries on man's economic, political, and environmental systems.

MIN 102 1 Credit Spring
Introduction to Minerals Industry (1+0)
Fundamentals of the mineral industry.

MIN 103 2 Credits Fall
Introduction to Mining Engineering (2+0)
Concepts and methods utilized in mining engineering. Practical training in safety and mining unit operations.

MIN 104 1 Credit Fall
Mining Safety and Operations Laboratory (0+3)
Practical training at the Silver Fox Mine in mining operations and safety. Course complies with Mine Safety and Health Administration (MSHA) 40 Hour New Miner Training.

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. (Prerequisites: MATH 107-108.)

MIN 301 3 Credits Spring
Mine Plant Design (3+0)
Quantitative study and design of various systems and equipment used in haulage, hoisting, drainage, pumping and power (compressed air and electricity). The importance of the natural conditions and production level in the equipment selection procedure is emphasized. (Prerequisites: ES 208, ES 307, ES 341.)

MIN 302 3 Credits Spring
Underground Mine Environmental Engineering (2+3)
Analysis of underground mine ventilation systems, ventilation planning, design and engineering control, mine ventilation network. (Prerequisite: MIN 103.)

MIN 370 3 Credits Spring
Rock Mechanics (2+3)
Strength and deformation characteristics of rock, stress distribution in the vicinity of mining openings, design criteria and support for structures in rock mass, instrumentation and monitoring of opening's stability as well as strata control and surface subsidence. (Prerequisites: ES 331 and STAT 451 or equivalent.)

MIN 400 1 Credit As Demand Warrants
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.

MIN 407 2 Credits Alternate Spring
Mineral Industry and the Environment (2+0)
Principles and practices of mining reclamation and waste disposal. Impact of regulations on the mineral industry and the environment. (Prerequisite: Permission of instructor. Next offered: 1989-90)

MIN 408 3 Credits Spring
Mineral Valuation and Economics (3+0)
Theory of sampling techniques, deposit and reserve calculations, and analysis of mineral economic problems. (Prerequisite: Permission of the instructor.)

MIN 409 3 Credits Spring
Operations Research and Computer Applications in Mineral Industry (3+0)
Use of operations research and computer techniques for understanding, analysis, forecasting and optimization of mining operations and systems. (Prerequisites: MIN 301 or concurrent registration, ES 201, and STAT 451 or STAT 301.)

MIN 433 3 Credits Alternate Fall
Mining Access, Safety, and Environmental Law (3+0)
History of mining law. Access to property, safety and environmental laws (and court decisions) as they pertain to mining. (Prerequisite: Senior standing or permission of instructor. Next offered: 1989-90.)

MIN 443 3 Credits Fall
Rock Fragmentation (3+0)
Selection and design of modern mining rock disintegrating techniques. In particular, cutting, drilling, blasting, water jets and other methods are covered. (Prerequisite: MIN 370.)

MIN 445 3 Credits Fall
Design of Surface Mines for Conventional and Arctic Conditions (3+0)
Surface mining methods. Principles and reclamation techniques, design of surface mine infrastructure. (Prerequisites: MIN 443 or concurrent registration.)

MIN 446 3 Credits Fall
Underground Mining Methods and Their Design (3+0)
Design of main development openings; mining methods such as room and pillar, open stoping, supported stopes and caving systems; selection of mining method and mine planning processes will be covered. (Prerequisites: MIN 301, MIN 302, and MIN 370.)

MIN 447 3 Credits Fall
Mining Methods for Placer and Offshore Deposits (3+0)
Design of placer and offshore mining methods. Occurrence properties and mineral content of placer and offshore deposits. Underground mining of frozen placer deposits. (Prerequisites: MIN 301, senior standing or permission of the instructor.)

MIN 472 3 Credits Alternate Spring
Design, Construction and Stability of Mining Openings (3+0)
Stability and design of excavating methods, reinforcement and monitoring systems for openings constructed in rock mass. Construction in swelling rock and frozen ground, underground hazards (bursts and water inflow) as well as monitoring of deformation and stresses associated with the opening's presence are covered. (Prerequisites: MIN 370, MIN 443. Next offered: 1989-90.)

MIN 490 2 Credits Spring
Mining Design Project (1+3)
Design of mine layout including extraction and beneficiation and economic evaluation of the complete mining cycle. (Prerequisites: MIN 408, MIN 445, MIN 446, and MIN 447; MIN 408 can be taken concurrently.)

MIN 621 3 Credits Fall
Advanced Mineral Economics (3+0)

MIN 631 4 Credits Alternate Fall
Research Methods in Mineral Engineering (3+3)

MIN 635 3 Credits Spring
Geostatistical Ore Reserve Estimation (2+3)
(Same as GE 635)

MIN 637 3 Credits Alternate Fall
Mine Systems Simulation (2+3)

MIN 646 3 Credits Alternate Spring
Mining Engineering in the Arctic (3+0)

MIN 647 2 Credits Alternate Fall
Advanced Underground Mine Design (1+3)

MIN 652 3 Credits Alternate Spring
Numerical Methods in Mine Ventilation (2+3)

MIN 670 3 Credits Alternate Spring
Optimization Models in the Mineral Industry (3+0)

MIN 673 3 Credits Alternate Fall
Theoretical and Experimental Methods in Rock Mechanics (2+3)

MIN 674 3 Credits Alternate Spring
Selected Topics in Rock Mechanics (2+3)

MIN 688 1 Credit Fall
Graduate Seminar I (1+0)
(Same as MPR 688)

MIN 689 1 Credit Spring
Graduate Seminar II (1+0)

Museum Studies

MSM 211 3 Credits Alternate Fall
Fundamentals of Museum Studies I (3+0)
An integrated view of the origin, structure and development of museums, types of museums and their functions, professional directions and ethics. Overview of collection management systems and techniques, and the role and ethics of museum conservation. (Prerequisite: Sophomore standing or permission of the instructor. Next offered: 1990-91.)

MSM 212 3 Credits Alternate Spring
Fundamentals of Museum Studies II (3+0)
Museum education, including educational goals and objectives, the museum visitor, program development and publicity. A comprehensive survey of exhibits theory and practices, management practices in a museological context including types of museum administrative frameworks, legal considerations, and financial management. (Prerequisite: MSM 211. Next offered: 1990-91.)

MSM 311 3 Credits Alternate Fall
Museum Administration (3+0)
An exploration of the administrative philosophy and procedures found in both public and private, large and small museums; the types and sources of support and the types of interactions with local and national supportive groups. (Prerequisites: MSM 211 and 212 or permission of the instructor. Next offered: 1989-90.)

MSM 312 3 Credits Alternate Spring
Museum Collection Management (3+0)
Basic curatorial techniques and problems; major aspects of collection management will be studied, from field collecting and other forms of acquisition through accessioning, cataloging, preparation, exhibit, teaching, and research requirements. (Prerequisites: MSM 211 and 212 or permission of the instructor. Next offered: 1989-90.)

MSM 487 3 Credits As Demand Warrants
Museum Practicum
Student participation in one or more phases of museum operations or disciplines. Special projects are to be developed by the student under the supervision of the appropriate museum personnel. (Prerequisites: MSM 211 and 212 and permission of the instructor.)

MSM 488 3 Credits As Demand Warrants
Individual Research: Field Collecting Museum Specimens
Collection of specimens in the field, addresses philosophies, purposes and goals of field collection, procedures for collecting museum specimens, and methods of handling materials before it reaches the museum. Field trips may be required. By arrangement with the appropriate curator(s). May be repeated for credit with permission of instructor. (Prerequisites: MSM 211 and 212 and prior disciplinary preparation or permission of the instructor.)

MUSIC

Music Ensembles And Class Lessons

MUS 101 1 Credit Fall and Spring
Choral Society (0+3) h

MUS 151 1 Credit Fall and Spring
Class Lesson (0+3) h
Class instruction in piano, voice, orchestral instrument, or guitar. Class lesson fee: see below. (MUS 151 may be repeated for credit. Course may not be audited.)

MUS 153 1 Credit Fall and Spring
Functional Piano (1+0) h
Piano laboratory: instruction designed to help music majors obtain the performance, sight-reading, and harmonization-transposition skills needed to pass the Piano Proficiency Examination. It also provides non-music majors with an opportunity to study basic piano skills on a space-available basis. Lesson fee: see below. (Prerequisites: Music majors — MUS 131 or equivalent or concurrent enrollment in MUS 131; non-music majors: permission of instructor. Course may not be audited.)

MUS 203 1 Credit Fall and Spring
Orchestra (0+3) h
(Admission by audition.)

MUS 205 1 Credit Fall and Spring
Concert Band (0+3) h
(Admission by audition.)

MUS 211 1 Credit Fall and Spring
"Choir of the North" (0+3) h
(Admission by audition.)

MUS 253 0 Credit Fall and Spring
Piano Proficiency (0+1)
Final phase of completion of piano proficiency examination. (Prerequisite: MUS 153 and permission of instructor.)

MUS 307 1 Credit Fall and Spring
Chamber Music (0+3) h
String, brass, or woodwind chamber music; piano chamber music and accompanying; stage band, and Madrigal singers. (Prerequisite: Permission of instructor.)

MUS 313 1, 2, 3 Credits Fall and Spring
Opera Workshop (0+3, 6 or 9) h

MUS 317 1 Credit Fall and Spring
Arctic Chamber Orchestra (0+3) h
Chamber Music. (Admission by audition.)

MUS 606 1-2 Credits As Demand Warrants
Advanced Chamber Music (0+3)-(1+3)

Applied Music

MUS 161, 162 2 or 4 Credits Fall and Spring
MUS 261, 262 2 or 4 Credits Fall and Spring
MUS 361, 362 2 or 4 Credits Fall and Spring
MUS 461, 462 2 or 4 Credits Fall and Spring
Private Lessons h
Private instruction in piano, organ, voice, orchestral and band instruments, or guitar. 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. Private lesson fee: see below. (Prerequisite: Admission by audition. Course may not be audited. Credit-No Credit grading not permitted.)

MUS 190 0 Credit Fall and Spring
Recital Attendance (1+0)
Recital and concert attendance.

MUS 390 0 Credit Fall and Spring
Junior Recital
Half-length solo music performance recital. (Prerequisites: MUS 262 or equivalent, junior standing in music study, permission of instructor.)

MUS 490 0 Credit Fall and Spring
Senior Recital
Full length music solo recital. (Prerequisites: MUS 362 or equivalent, senior standing in music study, MUS 390 or equivalent, permission of instructor.)

MUS 661 2 or 4 Credits Fall and Spring
Advanced Private Lessons

CLASS LESSONS AND APPLIED MUSIC FEES

MUS 151 - Class Lessons - Lesson fees for non-music majors and music majors enrolled in 11 or fewer credits: $70.00

Lesson fees for music majors enrolled in 12 or more credits: $35.00

MUS 153 - Functional Piano - Lesson fees for non-music majors and music majors enrolled in 11 or fewer credits: $70.00

Lesson fees for music majors enrolled in 12 or more credits: $35.00

MUS 161-462, 661 - Private Lessons - Lesson fees for non-music majors and music majors enrolled in 11 or fewer credits: $145.00

Lesson fees for music majors enrolled in 12 or more credits: $75.00

For music majors, any combination of the above fees shall not exceed a maximum charge of $105.00

Music Theory, Music History, and Music Education

MUS 103 3 Credits Fall and Spring
Music Fundamentals (3+0) h
An introductory study of the language of music. Includes basic notation, melodic and rhythmic writing, scales, bass and treble clefs, and basic harmony.

MUS 123 3 Credits Spring
Appreciation of Music (3+0) h
A guide to the richer enjoyment of classical music through a study of the main periods, styles, and composers from the time of the Gregorian chant to the present.

MUS 124 3 Credits Fall
Music in World Cultures (3+0) h
A survey of traditional and folk music around the world, with an emphasis on Oriental and African music. The course examines the different uses of music in various societies, and includes demonstration of ethnic musical instruments.

MUS 131 2 Credits Fall
MUS 132 2 Credits Spring
Basic Theory (1+2) h
First semester: Intensive training in fundamentals of music, pitch and rhythm notation, scales, modes, triads, and techniques of harmonization. Second semester: Concentration upon acquisition of skills in harmonization and techniques of formal and harmonic analysis. (Prerequisites: Concurrent enrollment in MUS 133 for 131 and 134 for 132 required unless exempted by music theory placement test.)

MUS 133 2 Credits Fall
MUS 134 2 Credits Spring
Basic Ear Training (2+0) h
Ear training skills including sight reading, sight singing, error detection, and dictation. Use will be made of programmed materials in a laboratory situation in addition to classroom instruction. Concurrent enrollment in MUS 131 or 132 required unless exempted by music theory placement examination.

MUS 221 3 Credits Fall
MUS 222 3 Credits Spring
History of Music (3+0) h
Fall semester: Music before 1750. Spring semester: Music since 1750. (Prerequisite: MUS 131-132 or permission of the instructor.)

MUS 223 3 Credits Spring
Native Alaskan Music (3+0) h
Eskimo and Indian dance and song styles in Alaska. Emphasis on the sound, effect, and purpose unique to each and the collection methods, analysis, and the development of a broad musical perspective.

MUS 231 2 Credits Fall
MUS 232 2 Credits Spring
Advanced Theory (1+2) h
Continued study 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: Concurrent enrollment in MUS 233 for 231 or 234 for 232 unless exempted by music theory placement test.)

MUS 233 1 Credit Fall
MUS 234 1 Credit Spring
Advanced Ear Training (0+2)
Continued training in sight singing and melodic dictation skills begun in MUS 133 and 134. Harmonic dictation and error detection skills also included. (Prerequisites: Concurrent enrollment in MUS 231 for 233 or 232 for 234 required unless exempted by music theory placement test.)

MUS 309 3 Credits Fall
Elementary School Music Methods (3+0)
(Same as Ed. 309)
Principles, procedures, and materials for teaching music to children at the elementary level. (Prerequisite: Ed. 330.)

MUS 315 2 Credits Fall and Spring
Music Methods and Techniques (1+2)
Instruction in voice and the basic instruments of band and orchestra. Emphasis on teaching methods in these areas. This course number is repeatable for credit. See Music Department Handbook. (Prerequisite: Permission of instructor.)

MUS 331 3 Credits Alternate Spring
Form and Analysis (3+0) h
Formal and stylistic musical elements in historical context with special application to problems of proper stylistic performance. (Prerequisite: MUS 232 or permission of the instructor. Next offered: 1989-90.)

MUS 351 3 Credits Fall
Conducting (3+0) h
Principles of conducting; interpretation of vocal and instrumental ensemble music. (Prerequisite: MUS 232.)

MUS 405 3 Credits Spring
Secondary School Music Methods (2+3)
Principles and methods of teaching music in junior and senior high school with emphasis on philosophies, management, objectives, teaching techniques, choral, and general music programs. Includes the implementation of teaching plans in classroom and rehearsal settings. (Prerequisite: Permission of instructor. Should be taken prior to Ed. 453 — Secondary Student Teaching.)

MUS 421 3 Credits Alternate Fall
Music before 1620 (3+0) h
Music from its origins in Greek antiquity through the Middle Ages and the Renaissance up to and including the emergence of opera at the turn of the seventeenth century. Includes study of prominent composers, early musical forms, original sources in translation, development of musical notation, and development of early musical instruments. (Prerequisites: MUS 221 and 222 or permission of instructor. Next offered: 1989-90.)

MUS 422 3 Credits Alternate Spring
Music in the Seventeenth and Eighteenth Centuries (3+0) h
Music from the turn of the seventeenth century through Beethoven. Examination of style and performance practices relating to opera, oratorio, cantata, sonata, and concerto, as well as chamber music. Development of keyboard instruments as well as other instrumental genres: strings, winds, and brasses. Intensive music listening as well as reading contemporary sources in translation. Style study of representative works from early Baroque composers through Bach, Handel, Bach's sons, Haydn, Mozart, Beethoven, and others. Musical developments in Italy, England, France, Germany, Austria, and cross-cultural influences. (Prerequisites: MUS 221 and 222 or permission of instructor. Next offered: 1989-90.)

MUS 423 3 Credits Alternate Fall
Music of the Nineteenth Century (3+0) h
Musical trends in the 19th century. Romanticism, Nationalism, Italian Opera, and Wagnerian Music Drama, as exemplified by representative works, chosen from the music of Weber, Berlioz, Mendelssohn, Schumann, Brahms, Wagner, Chopin, Tchaikowsky, and others. Related readings in other aspects of the Romantic movement. (Prerequisite: MUS 221 or 222 or permission of the instructor. Next offered: 1989-90.)

MUS 424 3 Credits Fall
Music in the Twentieth Century (3+0) h
Music since 1900. Style studies of significant works from the modern repertoire. Hindemith, Bartok, Schoenberg, Stravinsky, the avant-garde, and others. (Prerequisite: MUS 221 or 222 or permission of the instructor.)

MUS 431 3 Credits Alternate Spring
Counterpoint (3+0) h
Contrapuntal techniques by means of analysis and synthesis of pieces in contrapuntal idioms. (Next offered: 1989-90.)

MUS 432 3 Credits Alternate Fall
Orchestration and Arranging (3+0) h
Instrumentation and arranging for vocal and instrumental ensembles. (Next offered: 1989-90.)

MUS 433 2-3 Credits Alternate Fall
Seminar in Musical Composition (2+0, 3+0) h
Development of compositional skills based upon the works of predominately twentieth-century composers. Repeatable for credit. (Prerequisites: MUS 232 or equivalent and/or permission of instructor. Next offered: 1989-90.)

MUS 441 3 Credits Alternate Fall
Alaska Native Music and Social Change (3+0) h
A consideration of cultural persistence and of differential change in musical form and function. (Prerequisites: MUS 232 or equivalent and/or permission of instructor. Next offered: 1990-91.)

MUS 601 3 Credits Fall
Introduction to Graduate Study (3+0)

MUS 607 3 Credits As Demand Warrants
Seminar in Elementary and Secondary General Classroom Music (3+0)

MUS 608 2 Credits As Demand Warrants
Seminar in Secondary Music Ed. (2+0)

MUS 625 1-3 Credits As Demand Warrants
Topics in Music History (1-3+0)

MUS 631 3 Credits Alternate Fall
Seminar in Music Theory: History and Pedagogy (3+0)

MUS 641 3 Credits Alternate Fall
Methods of Ethnomusicological Research (3+0)

MUS 651 2-3 Credits As Demand Warrants
Advanced Conducting and Rehearsal Techniques (2-3+0)

MUS 671 3 Credits As Demand Warrants
Psychology of Music (3+0)

MUS 690 0 Credit Fall and Spring
Graduate Recital

Northern Studies

NS 484 3 Credits Alternate Spring
Seminar in Northern Studies (3+0) s
An interdisciplinary seminar focusing on topics relating to the North with emphasis on the physical sciences, the peoples and the socioeconomic and political aspects of the area. Specialists in the various fields will assign readings and conduct discussions. (Prerequisite: At least junior standing or permission of instructor. Next offered: 1989-90.)

Office Professions

OP 072 1 Credit As Demand Warrants
Alphabetic Filing (1+0)
Organizing records alphabetically according to standard indexing rules for names of individuals, organizations and business firms.

OP 073 1 Credit As Demand Warrants
Spelling and Vocabulary (1+0)
Designed to help the student develop skill in spelling correctly and using general and specialized terms in business.

OP 080 1 Credit As Demand Warrants
Keyboarding (0+3)
Basic keyboarding skills with emphasis on correct technique and development of speed and accuracy. Open lab.

OP 082 1 Credit As Demand Warrants
Clerical Accounting I (1+0)
Acquaints student with the relationship between accounting and business; develops an understanding of the steps of the accounting cycle; and develops an understanding of the principles and procedures involved in handling cash.

OP 083 1 Credit As Demand Warrants
Clerical Accounting II (1+0)
Acquaints student with an understanding of accounting systems and develops competence in the use of journals, subsidiary ledgers and in preparing financial statements as well as an understanding of end-of-the-period procedures. (Prerequisite: OP 082.)

OP 086 1 Credit As Demand Warrants
Reception Skills (1+0)
Designed to help in the preparation of individuals for an entry level position as office receptionist by outlining the characteristics and skills of the office receptionist and providing the opportunity to develop these traits. Open lab.

OP 100 3 Credits As Demand Warrants
Alphabetic Shorthand (3+0)
Introduces alphabetic shorthand, including alphabet, shortcuts, phasing, and other abbreviating devices.

OP 101 4 Credits As Demand Warrants
Shorthand Principles I (4+0)
Provides student with instruction and practice in the use of Gregg Shorthand, Series 90 in order to develop ability to read shorthand and transcribe dictation taken at a minimum of 60 wpm on practiced material.

OP 102 4 Credits As Demand Warrants
Shorthand Principles II (4+0)
Development of ability to construct new outlines from dictation under stress of dictation at 80 to 100 wpm. (Prerequisite: OP 101 and 103 or permission of instructor.)

OP 103 1-3 Credits As Demand Warrants
Keyboarding I/Beginning Typewriting (1-3+0)
Basic keyboarding skills with emphasis on correct techniques and development of speed and accuracy. Introduction to centering, typing of personal and business letters, envelopes, simple tables and manuscripts. For those with no previous typing training. May be taken in 1-credit segments (103A, B, C) in the Office Professions lab.

OP 104 1 Credit As Demand Warrants
Typing Skill Building (1+0)
This course will help improve speed and/or accuracy on straight and numerical copy. May be repeated up to 3 credits. (Prerequisite: OP 103 or permission of instructor.)

OP 105 3 Credits As Demand Warrants
Keyboarding II/Intermediate Typewriting (3+0)
Course is designed to attain at least minimal typing skill, experience and knowledge necessary for typist beginning an office career. Lab arranged. (Prerequisite: OP 103 or one year high school typing or permission of instructor.)

OP 106 3 Credits As Demand Warrants
Keyboarding III/Advanced Typewriting (3+0)
Course designed to achieve level of typing skill, experience, knowledge and production output that will assure successful typing performance in business office position. Lab arranged. (Prerequisite: OP 105 or permission of instructor.)

OP 107 3 Credits As Demand Warrants
Medical Terminology (3+0)
Study of medical terminology, including analysis of its roots and origins. Anatomical, diagonstic, operative, and laboratory terminology of the human body systems, and selected medical specialties. Emphasis on spelling and pronunciation.

OP 108 4 Credits As Demand Warrants
Medical Office Procedures I (4+0)
Introduction and orientation to business aspects of medical offices. Includes medical law and ethics, reception and telephone procedures, medical economics, orientation to medical profession and patient care.

OP 109 1 Credit As Demand Warrants
Proofreading (1+0)
Provides instruction and practice in finding, making and correcting errors that are commonly made but often overlooked in business communication. Practice in recognizing frequently made errors, where they are likely to occur and special techniques of finding them will be provided. Open lab.

OP 110 3 Credits As Demand Warrants
Office Procedures (3+0)
Duties and responsibilities of general office employees areas such as filing, effective processing of mail, telephone communication, meeting the public, office supplies, banking, employment procedures and grooming.

OP 112 2 Credits As Demand Warrants
Introduction to Word Processing (2+0)
Course designed to teach how to type documents on microcomputer using a word processing program.

OP 128 2 Credits As Demand Warrants
Word Processing/Displaywriter (2+0)
Word processing training. All machine functions are covered and applied to revision and application problems in simulated word processing setting. Should type 35 wpm prior to entry. Materials fee: $10.00. (Prerequisite: OP 103 or permission of instructor.)

OP 131 3 Credits As Demand Warrants
Business English (3+0)
Comprehensive review of grammar, punctuation, capitalization and spelling, with emphasis on business and office occupations.

OP 151 2 Credits As Demand Warrants
Microcomputer Wordprocessing/WordPerfect (2+0)
Provides practice on an IBM compatible microcomputer using Wordperfect, software to create, edit, and store documents as well as perform advanced applications using the software. Materials fee: $5.00. (Prerequisite: Keyboard speed of 35 wpm.)

OP 152 2 Credits As Demand Warrants
Microcomputer WordProcessing/Displaywrite 4 (2+0)
Provides instruction on an IBM compatible microcomputer using Displaywirte 4 software to create, edit and store documents as well as perform advanced applciations using the software. Materials fee: $5.00. (Prerequisite: Keyboard speed of 35 wpm.)

OP 157 1 Credit As Demand Warrants
Introduction to Office Computers (1+0)
Provides an introduction to personal computers as well as the basics of spreadsheets, data bases and word processing software commonly used in an office setting.

OP 201 3 Credits As Demand Warrants
Shorthand III-Speed Dictation and Transcription (3+0)
Strengthen typing and shorthand skills to improve speed and accuracy of transcription and to develop a high degree of shorthand skills.

OP 203 2 Credits As Demand Warrants
Calculating Machines (2+0)
Provides the student with basic operating knowledge of the electronic calculator in order to perform such business applications as discounting, amount and percent of change, prorating interest, commissions and payroll; to develop an occupation proficiency in the use of machines for initial job placement. Open lab. (Prerequisite: ABUS 155 strongly recommended.)

OP 207 2 Credits As Demand Warrants
Machine Transcription (2+0)
Training in machine transcription with emphasis on mailable copies. Review of language skills and vocabulary included. (Prerequisites: OP 105 or permission of instructor.)

OP 210 3 Credits As Demand Warrants
Legal Typewriting (3+0)
Provides legal procedures background as well as sharpen and refresh typewriting and transcription skills. Emphasis on understanding legal processes as well as developing expertise in legal typewriting and legal office procedures. (Prerequisite: OP 105 or permission of instructor.)

OP 212 2 Credits As Demand Warrants
Intermediate Word Processing (2+0)
Practice in producing typical office communications and reports using a microcomputer and word processing program.

OP 214 1 Credit As Demand Warrants
Medical Machine Transcription (1+0)
Instruction and practice needed to develop competency in formatting medical papers including a Medicare form, an admission form, a dental patient; preparing patient histories, medical reports, file cards and other medical documents. Develop competence in transcribing from machine dictation and in using medical terminology correctly. (Prerequisite: OP 105 and 207.)

OP 219 1 Credit As Demand Warrants
Legal Machine Transcription (1+0)
Instruction and practice needed to develop competency in formatting legal papers including a lease, bill of sale, subpoena, stipulations, interrogatories, notices and various types of orders. Develop competency in transcribing from machine dictation and in using the language of the law correctly.

OP 221 3 Credits As Demand Warrants
Filing/Records Management (3+0)
Introduction to records management including basic alphebetic storage with filing rules and cross-referencing and procedures for retrieving records manually. Includes adaptations of the alphabetic storage method including geographic, numeric and subject; storing and retrieving special records (card files, visible records, micorecords); organization and operation of records management programs and control of records systems.

OP 225 1-2 Credits As Demand Warrants
CPS Review
Prepares students for the CPS (Certified Professional Secretary) examination. Review sessions will be offered in the six areas covered by the exam: Behavioral Science in Business, Business Law, Economics and Management, Accounting, Office Administration and Communication. One credit will be granted for any combination of three of the above review topic areas. Material Fee: $5.00.

OP 228 1 Credit As Demand Warrants
Wordprocessing/Reportpack (1+0)
For operators using the IBM Displaywriter System. The Reportpack Feature will be used to create, maintain and print files. (Prerequisite: OP 128 or permissions of instructor.) Materials fee: $10.00.

OP 231 3 Credits As Demand Warrants
Business Communications (3+0)
Introduces composition and evaluation of various kinds of communications that commonly pass between a business person and associates, customers and dealers. Included will be inter-office memos, letters, reports and oral communications. (Prerequisite OP 131 or permission of instructor.)

OP 244 3 Credits Spring
Office Management (3+0)
Review of procedures, basic attitudes and skills required of a secretary in any type office. Range of opportunities for secretarial advancement through knowledge relating to ergonomics, automation, employee relations, productivity, etc. (Prerequisite: minimum of 12 credits in Office Professions or permission of instructor.)

OP 282 3 Credits As Demand Warrants
Cooperative Work Experience
On-the-job training related to occupational objectives. Weekly seminar with coordinator required. (Prerequisite: Permission of instructor and 12 credits in OP courses.)

Paraprofessional Counseling

PPC 101 3 Credits As Demand Warrants
Models of Human Personality and Counseling I (3+0)
Introduction to basic personality theories and theoretical approaches to counseling.

PPC 102 3 Credits As Demand Warrants
Models of Human Personality and Counseling II (3+0)
Theoretical approaches to personality theory, ideal and problematic functioning and relevant intervention by the counselor. (Prerequisite: PPC 101.)

PPC 105 3 Credits As Demand Warrants
Basic Helping Skills (3+0)
Introduction to the principles, skills and role of the helping process. A practical how-to-do-it course focusing on communications.

PPC 130 1 Credit As Demand Warrants
Stress Management (1+0)
Addresses the various techniques of stress management. Topics will include psycho-physiology of stress, acute and chronic stress and assessment of individual stress levels.

PPC 141 1 Credits As Demand Warrants
Adult Child of the Alcoholic (1+0)
Examines special characteristics and skills which are developed by children who grow up in homes with an alcoholic parent. Effect of these learned roles in adulthood will be explored in depth. Suggestions for intervention (helping) strategies with both children and adults will be addressed.

PPC 151 1 Credit As Demand Warrants
Blended Familes (1+0)
Provides a close look at YOURS, MINE and OURS by exploring the relationship formation and development of children and parents as they try to form a new family unit. Type of problems which can be expected and alternative solutions will be discussed.

PPC 201 3 Credits As Demand Warrants
Basic Principles/Group Counseling (3+0)
Introduction to concepts and techniques of counseling, methods for establishing effective group goals, objectives and group organization.

PPC 203 3 Credits As Demand Warrants
Substance Abuse Counseling I (3+0)
Special difficulties of working with the drug/alcohol abusing person will be explored.

PPC 204 3 Credits As Demand Warrants
Working With Marriage and Family Problems (3+0)
Exploration of multiple factors affecting marriage today. Sources of marriage problems and specific skills in their assessment and treatment will be covered. Emphasis on systems approach.

PPC 205 3 Credits As Demand Warrants
Advanced Helping Skills (3+0)
Development of relationship skills with emphasis on specialized methods of crisis intervention, behavioral techniques, and other methods of intervention. (Prerequisite: PPC 105.)

PPC 206 3 Credits As Demand Warrants
Paraprofessional Roles-Ethics (3+0)
Basic ethics of counseling necessary for the professional.

PPC 207 3 Credits As Demand Warrants
Personal Awareness and Growth (3+0)
Individual and group experiences to help the individual become more aware of self and other.

PPC 208 3 Credits As Demand Warrants
Human Problems and Evaluation I (3+0)
Introduction to adjustment psychology, inter-personal problems, intra-personal problems and an overview of assessment devices used in the helping profession.

PPC 209 3 Credits As Demand Warrants
Human Problems and Evaluation II (3+0)
Continuation of PPC 103 with focus on understanding the difference between constructive and destructive behavior. (Prerequisite: PPC 208.)

PPC 212 3 Credits Alternate Spring
Counseling Children (3+0)
Developing skills to work with children's emotional, social and behavioral problems. Discusses developmental stages, self-esteem, normal vs. abnormal behavior, relationship of counselor and child, working with significant adults in the child's life, communication, identifying needs, problem solving, play therapy, changing behaviors, working with groups. (Prerequisites: six PPC credits, work experience or permission of instructor.)

PPC 215 3 Credits As Demand Warrants
Working With People of Other Cultures (3+0)
This course is designed to provide an in-depth examination of counseling processes and practices in multi-cultural, multi-lingual settings.

PPC 289 3 Credits As Demand Warrants
Paraprofessional Practicum I and II
Supervised on-the-job counseling experience in a community agency. (Prerequisite: Permission of instructor and 12 credits in PPC courses.)

Petroleum Engineering

PETE 103 2 Credits Fall
Survey of the Energy Industries (2+0)
Overview of global energy supply and demand, alternate energy options, and petroleum production technology.

PETE 205 3 Credits Fall
Introduction to Petroleum Drilling and Productions (3+0)
Fundamental principles of drilling, well completions, production engineering; field trips to Alaskan oil fields if possible. (Prerequisite: MATH 200.)

PETE 211 1-2 Credits Spring
Drilling Laboratory (0+3 or 6)
Measurement of physical properties of drilling mud; optional BOP certification and drilling rig operation experience during spring break. (Prerequisite: PETE 205 or permission of instructor.)

PETE 301 3 Credits Fall
Reservoir Rock Properties (2+3)
Definition and measurement of the physical properties of reservior rocks; porosity, permeability, lithology, fluid saturations, relative permeability.

PETE 302 3 Credits Spring
Well Logging (3+0)
Comprehensive treatment of modern well logging methods including formation and production logging tools and techniques and basic concepts of log interpertation. (Prerequisite: Junior standing in engineering or geoscience.)

PETE 305 4 Credits Spring
Underground Fluids Behavior (3+3)
Chemical, physical, and thermodynamic properties of water, oil, and gas in petroleum formations; classification of petroleum reservoirs by fluid phase contents, and interpretation of PVT reports for reservoir fluid samples. (Prerequisites: PETE 301, ES 346.)

PETE 321 3 Credits Fall
Advanced Thermodynamics for Petroleum Engineers (3+0)
A thorough study of the thermodynamics involved in the transport of petroleum fluids from the formation to the surface with an emphasis on multi-phase, multi-component equilibrium processes. (Prerequisites: MATH 302, CHEM 321 and ES 346 and concurrent registration in ES 341.)

PETE 400 1 Credit Fall
Practical Engineering Report (0+3)
Report on practical experience from petroleum engineering summer job. (Prerequisite: Senior standing in engineering or geoscience, or permission of instructor.)

PETE 407 4 Credits Fall
Petroleum Production Engineering (3+3)
Well completion, workovers, surface and subsurface equipment design, sucker-rod pumping, gas lift, stimulation techniques, sand control. Laboratory includes measurement of gas and oil streams. (Prerequisite: ES 346 and concurrent enrollment in ES 341.)

PETE 421 3 Credits Fall
Subsurface Engineering (3+0)
Application of well logs to delineate reservior rock properties and its spatial variations. Estimation of petroleum in place. Impact of facies variation and depositional models for the design of production policies. Impact of formation structure on enhanced oil recovery methods. Reservoir surveillance. (Prerequisites: PETE 301, 302, and GEOS 370)

PETE 426 4 Credits Spring
Drilling Engineering and Laboratory (3+3)
Principles of drilling, drilling fluids, drilling mud, drilling problems, mud logging, drill stem testing, rig types, rig design and selection. Drilling optimization. Well control. (Prerequisites: ES 331 and ES 341.)

PETE 431 2 Credits Fall
Natural Gas Engineering (2+0)
The production of natural gas and condensate reservoirs. Design of processing, transportation, distribution and flow measurement systems. (Prerequisite: PETE 301.)

PETE 456 3 Credits Spring
Petroleum Evaluation and Economic Decisions (3+0)
Economic appraisal methods for oil field developmental project evaluations including risk analysis, probability, and statistics in decision making and evaluations. Case studies. (Prerequisites: MATH 202 and PETE 476.)

PETE 466 3 Credits Spring
Petroleum Recovery Methods (3+0)
Discussion of flow and physiochemical principles of oil recovery by water, chemical, thermal and miscible floods. Prediction of recovery for each of these methods. (Prerequisites: PETE 476 and ME 441.)

PETE 476 3 Credits Fall/Spring
Petroleum Reservoir Engineering (3+0)
Quantitative study and prediction of the behavior of oil and gas reservoirs under primary, secondary, and tertiary recovery mechanisms. (Prerequisites: PETE 301 and PETE 405.)

PETE 478 2 Credits Spring
Well Test Analysis (2+0)
Transient flow of fluids through porous media, application of solutions of the diffusivity equation to pressure buildup, drawdown, interference testing and log-log type curve analysis and effect of reservoir heterogeneities on pressure behavior. (Prerequisites: PETE 476 and MATH 302)

PETE 489 2 Credits Fall/Spring
Reservoir Simulation (2+0)
The theory and use of computer reservoir simulation in petroleum reservoir and production engineering. (Prerequisites: MATH 310 and PETE 476.)

PETE 607 3 Credits Fall
Advanced Production Engineering (3+0)

PETE 610 3 Credits Fall
Advanced Reservoir Engineering (3+0)

PETE 630 3 Credits As Demand Warrants
Waterflooding (3+0)

PETE 661 3 Credits Spring
Advanced Well Testing (3+0)

PETE 662 3 Credits Every Third Semester
Enhanced Oil Recovery (3+0)

PETE 663 3 Credits Fall
Advanced Reservoir Simulation (3+0)

PETE 665 3 Credits Every Third Semester
Advanced Phase Behavior (3+0)

PETE 666 3 Credits Every Third Semester
Advanced Drilling and Completions (3+0)

PETE 670 3 Credits Fall
Fluid Flow Through Porous Media (3+0)

PETE 683 3 Credits Every Third Semester
Advanced Natural Gas Engineering (3+0)

PETE 684 3 Credits Fall
Computational Methods in Petroleum Engineering (3+0)

Philosophy

PHIL 201 3 Credits Fall and Spring
Introduction to Philosophy (3+0) h
Terms, concepts, and problems as reflected in writings of great philosophers. (Prerequisite: Sophomore standing or permission of the instructor.)

PHIL 202 3 Credits Spring
Introduction to Eastern Philosophy (3+0) h
Basic assumptions, problems and conclusions of the major philosophical traditions of the Far East. (Prerequisite: PHIL 201 or permission of the instructor.)

PHIL 204 3 Credits Fall and Spring
Introduction to Logic (3+0) h
Principles of deductive and inductive logic and application of these laws in science and other fields; brief introduction to symbolic logic and its application. Materials fee: $0-10.00. (Prerequisite: Sophomore standing.)

PHIL 321 3 Credits Alternate Fall
Aesthetics (3+0) h
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. (Prerequisite: PHIL 201. Next offered: 1989-90.)

PHIL 322 3 Credits Alternate Spring
Ethics (3+0) h
Examination of ethical theories and basic issues of moral thought. Prerequisite: PHIL 201. Next offered: 1989-90.)

PHIL 341 3 Credits Alternate Fall
Epistemology (3+0) h
The nature of knowledge, truth and certainty. (Prerequisite: PHIL 201 next offered: 1989-90.)

PHIL 342 3 Credits Alternate Spring
Metaphysics (3+0) h
The nature of reality comprising both ontology and cosmology. (Prerequisite: PHIL 201. Next offered: 1989-90.)

PHIL 351 3 Credits Fall
History of Philosophy and Science (3+0) h
Ancient and medieval periods. (Prerequisite: Six credits in philosophy or social science.)

PHIL 352 3 Credits Spring
History of Philosophy and Science (3+0) h
Renaissance, modern, and recent periods. (Prerequisite: Six credits in philosophy or social science.)

PHIL 471 3 Credits Alternate Fall
Contemporary Philosophical Problems (3+0) h
Ideological issues facing the modern world. (Prerequisite: Nine credits philosophy or permission of the instructor. Next offered: 1989-90.)

PHIL 481 3 Credits Alternate Spring
Philosophy of Science (3+0) h
Comparison and discussion of various contemporary methodological positions. (Prerequisite: Junior standing. Next offered: 1989-90.)

PHIL 482 3 Credits Alternate Fall
Comparative Religion (3+0) h
Seven world faiths represent answers to questions of man's duty, his destiny and his nature. (Prerequisite: Permission of the instructor. Next offered: 1989-90.)

PHIL 483 3 Credits Alternate Spring
Philosophy of Social Science (3+0) h
Comparison and analysis of various contemporary methodological positions in the social sciences. (Prerequisite: Junior standing. Next offered: 1989-90.)

PHIL 484 3 Credits Alternate Spring
Philosophy of History (3+0) h
Critical examination of the nature of history and historical inquiry. (Prerequisite: Nine credits in philosophy or social science. Next offered: 1989-90.)

Physical Education

PER 100 1 Credit Fall and Spring
Physical Activities and Instruction (0+3)
Instruction, practice, and activity in a variety of physical activities, sports, and dance in separate sections. Laboratory fees for the following courses are: marksmanship, rifle marksmanship and bowling - $35.00.

PE 205 2 Credits Alternate Fall
Introduction to the Human Movement Sciences (2+0)
An overview of the human movement sciences that includes the interrelationship of the biological sciences, sociopsychological, historical and philosophical foundations and the role of the humanities in physical activity, fitness, sport and dance. Clarification of career possibilities is included.(Next offered: 1990-91)

PE 208 2 Credits Alternate Fall
Advanced Life Saving (1+3)
Knowledge and skills necessary to provide aid and treatment in aquatic emergencies. Instruction in American Red Cross Cardio-Pulmonary Resuscitation, Advanced Lifesaving, Advanced Swimmer, and Basic First Aid. (Prerequisite: Swim Test.) Certification fee: $5.00 covers American Red Cross Advanced Life Saving Certification. (Next offered: 1989-90.)

PE 210 1 Credit As Demand Warrants
Water Safety (1+3)
Includes review of courses instructors are eligible to teach, teaching methods relative to those courses, general teaching methods, and practice teaching. Review and practice of swimming and lifesaving skills.

PE 211 1 Credit Alternate Fall*
Fundamentals of Softball (1+3)
Basic skills in softball will be presented, with appropriate consideration for adult and youth groups. Emphasis will be on developing personal performance skills and safety procedures for effective class management. *(7 week session. Next offered: 1990-91.)

PE 212 1 Credit Alternate Fall*
Fundamentals of Basketball (1+3)
Basic skills in basketball will be presented, with appropriate consideration for adult and youth groups. Emphasis will be on developing personal performance skills and safety procedures for effective class management. *(7 week session. Next offered: 1990-91.)

PE 213 1 Credit **Alternate Spring***
Fundamentals of Ice Sports (1+3)
Basic skills in ice sports will be presented, with appropriate consideration for adult and youth groups. Emphasis will be on developing personal performance skills and safety procedures for effective class management. *(7 week session. Next offered: 1990-91.)

PE 214 1 Credit **Alternate Spring***
Fundamentals of Snow Sports (1+3)
Basic skills in snow sports will be presented, with appropriate consideration for adult and youth groups. Emphasis will be on developing personal performance skills and safety procedures for effective class management. *(7 week session. Next offered: 1989-90.)

PE 215 1 Credit **Alternate Fall***
Fundamentals of Volleyball (1+3)
Basic skills in volleyball will be presented, with appropriate consideration for adult and youth groups. Emphasis will be on developing personal performance skills and safety procedures for effective class management. *(7 week sessions. Next offered: 1989-90.)

PE 216 1 Credit **Alternate Fall***
Fundamentals of Rhythms (1+3)
Basic skills in rhythms will be presented with appropriate consideration for adult and youth groups. Emphasis will be on developing personal performance skills and safety procedures for effective class management. *(7 week session. Next offered: 1990-91.)

PE 217 1 Credit **Alternate Spring***
Fundamentals of Recreational Activities (1+3)
Basic skills in recreational activities will be presented, with appropriate consideration for adult and youth groups. Emphasis will be on developing personal performance skills and safety procedures for effective class management. *(7 week session. Next offered: 1989-90.)

PE 218 1 Credit **Alternate Fall***
Fundamentals of Soccer (1+3)
Basic skills in soccer will be presented, with appropriate consideration for adult and youth groups. Emphasis will be on developing personal performance skills and safety procedures for effective class management. *(7 week session. Next offered: 1989-90.)

PE 219 1 Credit **Alternate Spring***
Fundamentals of Aquatics (1+3)
Basic skills in aquatics will be presented, with appropriate consideration for adult and youth groups. Emphasis will be on developing personal performance skills and safety procedures for effective class management. *(7 week session. Next offered: 1989-90.)

PE 220 1 Credit **Every third semester***
Fundamentals of Wrestling (1+3)
Basic skills in wrestling will be presented, with appropriate consideration for adult and youth groups. Emphasis will be on developing personal performance skills and safety procedures for effective class management. *(7 week session. Next offered: Spring 1988.)

PE 221 1 Credit **Alternate Fall***
Fundamentals of Gymnastics (1+3)
Basic skills in gymnastics will be presented, with appropriate consideration for adult and youth groups. Emphasis will be on developing personal performance skills and safety procedures for effective class management. *(7 week session. Next offered: 1989-90.)

PE 222 1 Credit **Alternate Spring***
Fundamentals of Track and Field (1+3)
Basic skills in track and field will be presented, with appropriate consideration for adult and youth groups. Emphasis will be on developing personal performance skills and safety procedures for effective class management. *(7 week session. Next offered: 1990-91.)

PE 232 3 Credits **Alternate Spring**
Analysis of Human Movement (3+0)
Qualitative analysis of sport and dance through principles derived from the biological and physical sciences and directed towards understanding and improving human performance. (Next offered: 1990-91)

PE 246 3 Credits **Fall and Spring**
Advanced First Aid (3+0)
Knowledge and skills necessary to provide efficient aid and treatment in emergencies. Progresses through the Basic, Standard, and Advanced First Aid packages of the American Red Cross. Successful completion of requirements leads to certification by the American Red Cross in Advanced First Aid. Materials Fee: $10.00.

PE 300 1 Credit **Every third Fall**
Advanced Theory and Techniques for Teaching Gymnastics (1+3)*
Indepth study of advanced skills, strategies, and analysis in gymnastics. *Meets for 7 weeks. (Prerequisite: PE 221. Next offered: 1989-90)

PE 302 1 Credit **Every third Fall**
Advanced Theory and Techniques for Teaching Basketball (1+3)*
Indepth study of advanced skills, strategies, and analysis in basketball. *Meets for 7 weeks. (Prerequisite: PE 212 Next offered: 1990-91.)

PE 303 1 Credit **Every third Fall**
Advanced Theory and Techniques for Teaching Ice Sports (1+3)*
Indepth study of advanced skills, strategies, and analysis in teaching ice sports. *Meets for 7 weeks. (Prerequisite: PE 213. Next offered 1990-91.)

PE 304 1 Credit **Every third Spring**
Advanced Theory and Techniques for Teaching Snow Sports (1+3)*
Indepth study of advanced skills, strategies, and analysis in teaching snow sports. *Meets for 7 weeks. (Prerequisite: PE 214. Next offered 1990-91.)

PE 305 1 Credit **Every third Fall**
Advanced Theory and Techniques for Teaching Volleyball (1+3)*
In-depth study of advanced skills, strategies, and analysis in volleyball. *Meets for 7 weeks. (Prerequisite: PE 215. Next offered: 1990-91.)

PE 306 1 Credit **Alternate Spring**
Techniques in Teaching Creative Dance (1+3)*
Skill and practice in organizing creative dance experiences for all age groups. Emphasis is on learning techniques which will free people to create from their own movement vocabularies. Some emphasis on correct body alignment and techniques of moving. *Meets for 7 weeks. (Prerequisite: PE 216. Next offered: 1989-90.)

PE 307 1 Credit **Alternate Spring**
Techniques in Camping and Outdoor Recreation (1+3)*
In-depth study of advanced skills and organizational techniques in camping and outdoor recreation. *Meets for 7 weeks. One weekend campout will be required. Laboratory fee: $10.00. (Prerequisite: PE 217. Next offered: 1990-91.)

PE 308 1 Credit **Every third Fall**
Techniques in Track and Field (1+3)*
In-depth study of advanced skills and analysis of track and field. *Meets for 7 weeks. (Prerequisite: PE 222. Next offered: 1990-91.)

PE 309 2 Credits **Alternate Spring**
Aquatic Instructor (1+3)
Knowledge and skills necessary to teach swimming to children and adults, beginner through advanced swimmer and lifesaving. (Prerequisites: current American Red Cross Lifesaving Certificate and swim test.) Certification fee: $5.00. Covers administrative fee for American Red Cross Water Safety Instructor Certificate. (Next offered: 1989-90)

PE 310 1 Credit **Every third Spring**
Techniques in Teaching Folk and Square Dance (1+3)*
Techniques and practical application in organizing and teaching varying age and ability levels in folk and square dance. Dances will include partner and non-partner folk dances, some fad dances and traditional square dance, and some practice in cueing and calling will be provided. *Meets for 7 weeks. (Prerequisite: PE 216. Next offered: 1990-91.)

PE 316 3 Credits **Alternate Fall**
Motor Development (3+0)
Motor skill and behavior development, infancy through old age. Individual differences, issues, applications and appraisal techniques. (Prerequisites: PSY 101 and junior standing. Next offered: 1989-90)

PE 317 3 Credits **Every third Spring**
Motor Learning (3+0)
Physical skills learning processes, patterns, issues, programs, applications, and evaluation. (Prerequisites: PSY 101 and junior standing. Next offered: 1989-90)

PE 321 1 Credit **Fall/Spring**
Practicum in Physical Education (0+3)
Student will serve as apprentice instructor or leader in university class or with approved supervisor within the community and will assume increasing responsibility for planning and conducting activities under supervision. Class may be repeated. Only 2 credits may count toward department requirement. (Prerequisites: Appropriate 300 level technique courses and junior standing or equivalent background.)

PE 327 2 Credits Spring
Movement Activities for Children (2+0)
A practical background of sports, games, and fundamental movement activities appropriate for the child in the environment of the home, playground, or elementary school classroom or gymnasium. For parents, teachers, or others who work with children up to age 12. Course includes progressions in activities and participation in selected activities. (Prerequisites: PSY 101, sophomore standing.)

PE 400 2 Credits Every third Fall
Judging and Coaching Gymnastics (1+3)
Techniques for teaching, coaching, judging, and administering men's and women's gymnastics, including apparatus, tumbling, and floor exercise. (Prerequisite: Junior standing or previous gymnastic experience. Next offered: 1990-91.)

PE 401 2 Credits Every third Fall
Theory of Basketball (2+0)
Techniques of playing and coaching men's and women's basketball, including theories of offense and defense, contest stragegies and psychology of individual and team play. (Prerequisites: PE 302 and junior standing. Next offered: 1990-91.)

PE 405 2 Credits Alternate Fall
Concepts and Design of Physical Fitness Programs (1½+1½)
Development of knowledge of the problems, methods of achievement, and maintenance of physical fitness in the modern world. Assessment of personal fitness status, participation in selected fitness activities, and acquisition of skills in basic physical fitness activity. (Prerequisites: BIOL 111-112. Next offered 1989-90)

PE 406 3 Credits Alternate Fall
Methods of Teaching Physical Education (2+3)
Philosophy, curriculum development, methods for facilitating learning and controlling behavior, measurement and evaluation, observations, and teaching laboratories in elementary and secondary school physical education. (Prerequisite: ED 330. Next offered: 1989-90.)

PE 408 2 Credits Every third Spring
Aquatics Program Management (2+0)
Aquatic program planning and implementation, competitive swim team coaching and administration, and management of swimming pools. (Prerequisite: PE 219 or 309. Next offered: 1989-90.)

PE 411 3 Credits Alternate Spring
History and Philosophy of Sport and Physical Activity (3+0)
Examines the role of sport and physical activity from the perspective of the major philosophies. The contributions of physical activity to survival, artistic development, and classic and popular culture particularly as they have influenced the role of physical activity in the United States. (Prerequisite: Junior Standing. Next offered 1989-90.)

PE 412 3 Credits Alternate Fall
Principles and Problems in Athletic Coaching (3+0)
Philosophy and objectives of athletic competition at various age levels. The roles and responsibilities of the athletic coach. Problems of athletic coaching and management of athletes and their training. Content appropriate for those who plan to take leadership or coaching roles in any athletic programs, in schools, or in community recreation. (Prerequisite: Junior standing. Next offered: 1990-91.)

PE 421 4 Credits Alternate Fall
Physiology of Exercise (3+3) n
Study of the responses and adaptations of the human body to physical work, exercise and systematically applied stressors, including the effects of environmental stressors, especially those specific to northern regions. (Prerequisite: BIOL 111-112. Next offered: 1990-91.)

PE 425 3 Credits Alternate Fall
Administration in Physical Education and Athletics (3+0)
Principles and problems of planning, organizing, directing, and evaluating school programs in physical education, intramural sports, and interschool athletics. (Prerequisite: Junior standing. Next offered: 1989-90.)

PE 432 4 Credits Alternate Fall
Biomechanics of Human Performance (3+3) n
Mechanical analysis of human movement, focusing both internally on musculo-skeletal interactions and externally on the body with the environment, for the purpose of understanding how humans moves. (Prerequisites: BIOL 111-112, MATH 107. Next offered: 1989-90.)

PE 437 3 Credits Alternate Spring
Adapted Programs of Physical Activity (3+0)
Theory and practical guidelines for developing adapted movement activities and programs for persons who are impaired, disabled, or handicapped; "mainstreaming" such individuals in to regular programs in physical education and recreation. (Prerequisite: PSY 101 or permission of instructor. Next offered: 1990-91.)

PE 440 3 Credits Every third Spring
Care and Prevention of Athletic Injuries (3+0)
Scientific bases for the care and prevention of injuries, related to participation in sports and physical activity, rationale and strategies for taping and wrapping for injury prevention and rehabilitation, techniques in pre-activity conditioning and post-injury reconditioning, and equipment safety. (Prerequisites: BIOL 111-112, PE 205 or permission of instructor. Next offered: 1990-91.)

PE 442 3 Credits Alternate Spring
Measurements and Evaluation in Physical Education (3+0)
Theory and application of the evaluation process in Physical Education including basic statistics, formation of measureable behavorial objectives, written test construction, survey of fitness and skill tests, their selection, administration and interpretation of results, and the use of basic computer programs to calculate various statistical values. (Prerequisites: Completion of 8 credits from 211-222. Next offered: 1990-91.)

Physics

PHYS 101 3 Credits Spring
Introduction to Space Science (3+0) n
An exploration in non-mathematical terms of the discoveries of the space age for the general student. Topics include solar-terrestrial relations, the earth's upper atmosphere and magnetosphere (including the aurora), stratosphere, troposphere, and space communications, with emphasis on fundamental physical processes.

PHYS 103 4 Credits Fall
Laboratory fee: $5.00.

PHYS 104 4 Credits Spring
College Physics (3+3) n
Unified classical and modern physics. Laboratory Fee: $5.00 (Prerequisite: High school algebra and geometry, PHYS 103 for PHYS 104 or permission of instructor.)

PHYS 113 1 Credit Fall
Concepts of Physics (1+0)
A general review of experimental and theoretical studies of fundamental interactions of nature which have been recognized as major advances in human knowledge will be given. Application of these discoveries to modern technologies, such as solid state electronics, lasers, holography, nuclear fusion, medical diagnostics, remote sensing, etc., will be presented.

PHYS 211 4 Credits Fall and Spring
PHYS 212 4 Credits Fall and Spring
General Physics (3+3) n
Classical physics using calculus for majors in mathematics, physical sciences, and engineering. Laboratory Fee: $5.00. (Prerequisites: At least concurrent registration in MATH 201, PHYS 211 for PHYS 212, or permission of instructor.)

PHYS 213 4 Credits Spring
Elementary Modern Physics (3+3) n
Geometrical and physical optics: elementary-level modern physics including special relativity, atomic physics, nuclear physics, solid-state physics, elementary particles, simple transport theory, kinetic theory, and concepts of wave mechanics. (Prerequisites: PHYS 211 and 212 or permission of instructor.)

PHYS 275 3 Credits Fall
PHYS 276 3 Credits Spring
Astronomy (3+0) n
Science elective for the general student. Fall semester: The solar system, laws of motion, nature of radiation, astronomical instruments, the earth, the moon, planets, comets and meteors, and cosmogony. Spring semester: Stellar astronomy, physical properties and distribution of stars, interstellar matter, evolution of stars, galactic structure, and cosmology. Evening demonstrations both semesters. (Prerequisites: Sophomore standing, high school algebra and trigonometry, PHYS 275 for PHYS 276 or permission of instructor.)

PHYS 311 4 Credits Fall
PHYS 312 4 Credits Spring
Mechanics (4+0) n
Newtonian mechanics, motion of systems of particles, rigid body statics and dynamics, moving and accelerated coordinate systems, Lagrangian and Hamiltonian mechanics, continuum mechanics, theory of small vibrations, tensor analysis, rigid body rotations, special theory of relativity. (prerequisites PHYS 211 and at least concurrent enrollment in MATH 302; PHYS 311 for PHYS 312, or permission of instructor.)

PHYS 313 4 Credits Fall
Thermodynamics and Statistical Physics (4+0) n
Thermodynamic systems, equations of state, the laws of thermodynamics, changes of phase, thermodynamics of reactions, kinetic theory, and introduction to statistical mechanics. (Prerequisite: PHYS 212 or permission of instructor.)

PHYS 331 3 Credits Fall
PHYS 332 3 Credits Spring
Electricity and Magnetism (3+0) n
Electrostatics, dielectrics, magnetostatics, magnetic materials, and electromagnetism. Maxwell's equations, electromagnetic waves, radiation, physical optics, and selected topics from electronics. (Prerequisites: PHYS 212 and MATH 202 or permission of instructor.)

PHYS 381 2 Credits Fall
PHYS 382 2 Credits Spring
Physics Laboratory (0+6) n
Laboratory experiments in classical and modern physics. (Prerequisite: PHYS 213, PHYS 381 for PHYS 382, or permission of instructor.)

PHYS 411 4 Credits Fall
PHYS 412 4 Credits Spring
Modern Physics (4+0) n
Relativity, elementary particles, quantum theory, atomic and molecular physics, x-rays, and nuclear physics. (Prerequisites: PHYS 213, MATH 302 and MATH 314, PHYS 411 for PHYS 412, or permission of instructor.)

PHYS 445 3 Credits Spring
Solid State Physics and Physical Electronics (3+0) n
Theory of matter in the solid state and the interaction of matter with particles and waves. (Prerequisites: MATH 302, MATH314 and PHYS 411 or permission of the instructor.)

PHYS 462 4 Credits Fall
Geometrical and Physical Optics (3+3) n
Geometrical optics, interference and diffraction theory, non-linear optics, Fourier optics, and coherent wave theory. (Prerequisites: MATH 302, MATH 314 and PHYS 331 or permission of instructor.)

PHYS 611 3 Credits Alternate Fall
PHYS 612 3 Credits Alternate Spring
Mathematical Physics (3+0)
(Same as MATH 611-612)

PHYS 621 3 Credits Alternate Fall
Classical Mechanics (3+0)

PHYS 622 3 Credits Alternate Spring
Statistical Mechanics (3+0)

PHYS 626 3 Credits Alternate Fall
Fundamentals of Plasma Physics (3+0)

PHYS 627 3 Credits Alternate Spring
Advanced Plasma Physics (3+0)

PHYS 628 3 Credits Alternate Fall
Digital Time Series Analysis (3+0)

PHYS 629 3 Credits Alternate Fall
Methods of Numerical Simulation in Fluids and Plasma (3+0)
(Same as MSL 629)

PHYS 631 3 Credits Alternate Fall
PHYS 632 3 Credits Alternate Spring
Electromagnetic Theory (3+0)

PHYS 640 3 Credits Alternate Spring
Auroral Physics (3+0)

PHYS 645 3 Credits Alternate Fall
Fundamentals of Geophysical Fluid Dynamics (3+0)

PHYS 650 3 Credits Alternate Fall
Aeronomy (3+0)

PHYS 651 3 Credits Alternate Fall
PHYS 652 3 Credits Alternate Spring
Quantum Mechanics (3+0)

PHYS 672 3 Credits Alternate Fall
Magnetospheric Physics (3+0)

PHYS 673 3 Credits Alternate Spring
Space Physics (3+0)

Political Science

PS 101 3 Credits Fall and Spring
Introduction to American Government and Politics (3+0) s
Principles, institutions, and practices of American national government; the Constitution, federalism, interest groups, parties, public opinion, and elections.

PS 102 3 Credits Fall and Spring
Introduction to American Government and Politics (3+0) s
A survey of outstanding problems in policy areas of defense, energy, economic policy, civil rights, technology, social welfare, business regulation, pollution, and education.

PS 110 1 Credit Fall and Spring
Parliamentary Procedures (1+0)
(Same as ANS 110)
Introduction to the rules and principles of parliamentary procedures and their application to group decision-making processes.

PS 201 3 Credits Fall
Comparative Politics: Methods of Political Analysis (3+0) s
Modern methods of analyzing political behavior and processes on a cross-national basis. Specific topics to be covered in different semesters. (This course may be repeated for a maximum of 6 credits.)

PS 202 3 Credits Spring
Comparative Politics: Contemporary Doctrines and Structures (3+0) s
Analysis of conflicting approaches to the solution of social and political problems with emphasis on nations employing various forms of ideological systems. (This course may be repeated for a maximum of 6 credits.)

PS 210 3 Credits Spring
Alaska Government and Politics (3+0) s
A comprehensive introduction to the state's government and politics, including political history (as a territory and state), Constitution, political parties, interest groups, elections, public opinion, Governor, Legislature, Judiciary, administration; local government and public policy issues. An integrating theme of the course is the pattern of Alaska uniqueness, as compared to the contiguous-48 states. Special attention is given to relationships and responsiveness of government institutions to social, environmental and political changes of Northern communities.

PS 211 3 Credits Alternate Fall
State and Local Government (3+0) s
Forms, functions, and policies of state and local governments in the United States. Intergovernmental relations and comparative analysis of the politics of the 50 states. (Next offered: 1989-90.)

PS 212 3 Credits Alternate Spring
Introduction to Public Administration (3+0) s
(Same as JUST 259)
Theories and practice of public administration, especially as applied to federal agencies. Study of organization, planning, and decision making in implementing public policy. (Next offered: 1990-91.)

PS 222 3 Credits Fall
Research Methods (3+0) s
(Same as JUST 222)
Application of social science research methods to solving scientific and non-scientific questions arising in Justice or Political Science. Basic methods include experimentation and survey research. (Prerequisite: PS 101.)

PS 250 3 Credits Fall
History of the Law (3+0) s
(Same as JUST 250)
An introduction to the history of law in Western civilization with an emphasis on the development of Anglo-American law in America.

PS 263 3 Credits Fall and Spring
Alaska Native Politics (3+0) s
An introduction to the political development, organization, interests and activities of Alaska Natives; treatment of ethnic leadership issues, history of federal Indian policy, evolution of Native leadership, village and regional government, land claims, and community politics from the Alaska Native brotherhood to ANCSA to the Alaska Native Coalition. An emphasis of the course is comparison between Alaska Native political developments and those of other circumpolar Northern Native communities.

PS 301 3 Credits Alternate Fall
American Presidency (3+0) s
A study of the institution of the presidency in the American political system. (Prerequisite: PS 101 or consent of instructor. Next offered: 1990-91.)

PS 302 3 Credits Alternate Spring
Congress and Public Policy (3+0) s
A study of the American Congress in the political system. (Prerequisite: PS 101. Next offered: 1989-90.)

PS 303 3 Credits Fall
Introduction to Legal Processes (3+0)
(Same as JUST 303)
The purpose and function of law in society, with a focus on legal reasoning and decisionmaking in civil cases. (Prerequisites: PS 101, JUST 110.)

PS 310 3 Credits Alternate Fall
The Politics of Post-Industrial States (3+0) s
Political systems of societies which have completed their industrial revolutions. The problem of the welfare state, the no-growth society, the end of ideology, the loss of the work ethic, identity in homogeneous societies. Countries: the U.S., Great Britain, Canada, Soviet Union, Germany, Scandanavian nations, Japan. (Prerequisite: PS 101 or 102 or consent of instructor. PS 201 strongly recommended. Next offered: 1989-90.)

PS 311 3 Credits Alternate Spring
Government and Politics of the Soviet Union (3+0) s
A survey of Soviet institutions and political processes. (Prerequisites: PS 201 or permission of instructor. Next offered: 1989-90.)

PS 312 3 Credits Alternate Fall
Government and Politics of China (3+0) s
Modern Chinese politics and society, including government institutions, political processes, foreign relations, and U.S.-China relations (Prerequisites: PS 201 or consent of instructor. Next offered: 1990-91.)

PS 315 3 Credits Alternate Spring
American Political Thought (3+0) s
Political ideas in the United States from colonial times to the present: Puritanism, revolutionary ideas, Constitutionalism, nature of the Union, Progressive movement, pragmatism. (Prerequisite: PS 101 or consent of instructor. HIST 131 and 132 strongly recommended. Next offered: 1990-91.)

PS 321 3 Credits Fall
International Politics (3+0) s
Introduction to the international political system. Survey of international political theory; means of influence and power in international politics; arms control and disarmament; international economic relations; contemporary conflict resolution and strategic issues (such as the movement for a nuclear-free zone in the Arctic.) (Prerequisites: PS 101 and 102 or permission of instructor.)

PS 322 3 Credits Alternate Spring
International Law and Organizations (3+0) s
Introduction to international law, including development of law (for example, the Law of the Seas). Regional and international organizations; non-state actors in the world system (for example, the Inuit Circumpolar Conference, Greenpeace); international political integration. (Prerequisites: PS 101 and 102 or permission of instructor. Next offered: 1990-91.)

PS 325 3 Credits Spring
Native Self Government (3+0) s
(Same as ANS 325)
Comparative study of indigenous political systems, customary law and justice in Alaska emphasizing the organization of Native governance federal Indian Law and Alaska state chartered local government with comparisons between Alaska Native political development and those of tribes in the contiguous 48 states and northern hemisphere tribal people. (Prerequisites: HIST 100, PS 263.)

PS 330 3 Credits Spring
Law and Society (3+0) s
(Same as JUST 330)
Study of moral issues related to the proper reach, extent, and enforcement of the law. (Prerequisites: PS 101 or JUST 110.)

PS 401 3 Credits Alternate Spring
Political Behavior: Organizations (3+0) s
How organizations and groups in the U.S. behave. Focus on political parties, labor unions, business, and ethnic associations. Class research project on impact of organizations in modern political life. (Prerequisites: PS 101, 102 and 400 or permission of instructor. Next offered: 1990-91.)

PS 402 3 Credits Alternate Spring
Political Behavior: Individuals (3+0) s
How individuals behave in the U.S. polity. Focus on political parties, labor unions, business, and ethnic associations. Class research project on impact of political opinions, attitudes, beliefs, and values in modern political life. (Prerequisites: PS 101 and 102 or permission of instructor; PS 222 strongly recommended. Next offered: 1990-91.)

PS 403 3 Credits Alternate Spring
Public Policy (3+0) s
Discussion of the way in which the policy process works and how policy analysis is carried out. Examples of policy issues from recent cases, especially in Alaska. (Prerequisites: PS 101 and junior standing. Next offered: 1989-90.)

PS 404 3 Credits Spring
Introduction to Legal Research and Writing (3+0)
(Same as JUST 404)
The methods of legal research and preparation of legal materials. Introduction to the resources of law libraries and the techniques of presenting issues in legal form. (Prerequisites: PS 101, JUST 110, JUST/PS 303.)

PS 411 3 Credits Alternate Fall
Classical Political Theory (3+0) h
Political ideas from ancient Greece, Rome, and the Judaeo-Christian tradition. Theories of Plato, Aristotle, Cicero, Augustine, and Aquinas. (Prerequisites: PS 101 and 102 or consent of instructor. Next offered: 1989-90.)

PS 412 3 Credits Alternate Spring
Modern Political Theory (3+0) s
Political ideas from the Renaissance to the modern world. Theories of Machiavelli, Hobbes, Locke, Rousseau, Burke, Marx, and Lenin. (Prerequisites: PS 101 and 102 or consent of instructor; PS 411 strongly recommended. Next offered: 1989-90.)

PS 415 3 Credits Alternate Fall
Contemporary Political Theory (3+0) s
Theories of types of democratic regimes, including individualist and socialist. Analysis of underlying values and structural differences, drawing upon contemporary national state cases. (Prerequisites: PS 101 and 102 or permission of instructor; PS 412 strongly recommended. Next offered: 1990-91.)

PS 435 3 Credits Alternate Fall
The Supreme Court and the American Legal System (3+0) s
The role of the Supreme Court in the development of American law with emphasis on the influence of social, political, and economic factors on the behavior of courts. (Prerequisites: PS 101 and 102 or permission of instructor. Next offered: 1990-91.)

PS 436 3 Credits Alternate Spring
The Courts and Civil Liberties (3+0) s
Origin and development of civil and political liberties; responsibility of the branches of government and the people for their maintenance. (Prerequisite: PS 101. Next offered: 1990-91.)

PS 437 3 Credits Alternate Spring
Foreign Policy (3+0) s
U.S. foreign policy in the post-war world, including development of policy (domestic and foreign influences), administration of political and military policies, policy coordination and evaluation of policy effectiveness in the nuclear age. (Prerequisites: PS 101 and 102 or permission of instructor. Next offered: 1989-90.)

PS 450 3 Credits Alternate Spring
Comparative Aboriginal Rights and Policies (3+0) s
(Same as ANS 450)
Use of the case-study approach to develop comparative frameworks for assessing scope and nature of Aboriginal Rights and Policies in different Nation-State Systems. Seven Aboriginal situations are examined for factors promoting or limiting Aboriginal self-determination. (Prerequisites: Upper division standing or instructor's permission. Next offered: 1989-90.)

PS 475 3 Credits Fall and Spring
Internship in Public Affairs (3+0)
Study of public agencies or organizations through actual experience. (Admission by permission of the instructor.)

PS 480 1-3 Credits Fall and Spring
Model United Nations (1-3+0) s
The history, organization, functions, and procedures of the United Nations. Can be taken for any combination of parts A, B, C for a total of 6 credits.

PS 480A Model U.N.: Member Nations Fall
Introduction to United Nations organization and procedures. 1 credit (may be repeated for a maximum of 2 credits).

PS 480B Model U.N.: Simulation Spring
Introduction to the use of simulation in international policymaking and administration, focusing on a United Nations member nation. 1 credit (may be repeated for a maximum of 2 credits).

PS 480C Model U.N.: Conference Participation Spring
Participation in the Annual Session of the Model United Nations. 1 credit (may be repeated for a maximum of 2 credits). (Prerequisite: PS 321 or permission of instructor.)

PS 481 3 Credits As Demand Warrants
Geopolitics and the International Environment (3+0) s
Survey of the relationship of the international environment and world politics, with a focus on resource politics. Energy policies from an international perspective, including bi-lateral and multi-lateral negotiations (concerning acid rain and global warming, for example) and negotiations between host states and trans-national corporations over management and the distribution of the costs and benefits of resource exploitation. (Prerequisites: PS 101 or 102 or permission of instructor; PS 321 strongly recommended.)

Psychology

PSY 101 3 Credits Fall and Spring
Introduction to Psychology (3+0) s
Fundamentals and basic principles of general psychology emphasizing both the natural science orientation and the social science orientation including the cultural, environment, heredity, and psychological basis for integrated behavior; visual perception and its sensory basis; audition and the other senses; motivation and emotion; basic processes in learning, problem solving, and thinking; personality; psychological disorders; and the prevention, treatment, and therapeutic strategies. (Also available via television as a self-paced, computer-aided course; special telecourse fee: $20.00.)

PSY 110 1 Credit Fall and Spring
Orientation to College (2+0)
(Same as DEVS 110)
An overview of the university as an institution with strategies and resources available to ensure a successful transition to college life in general, and specifically, the University of Alaska Fairbanks. Topics include academic and developmental skill building strategies, such as study skills, time management, career planning and stress management. An examination of Alaska's past, present and future from social, cultural, political and economic perspectives, including Pacific Rim and international/global issues. Graded Pass/Fail.

PSY 116 2 Credits As Demand Warrants
Loosening the Grip: A Survey of Alcohol Information (2+0)
An alcohol education course covering such topics as factors affecting alcohol use; the effects of alcohol; the symptoms and causes of alcoholism and alcoholic behavior; intervention and treatment; and special treatment considerations (the family of the alcoholic, special populations and prevention).

PSY 161 3 Credits As Demand Warrants
Counseling Skills I (3+0)
The study and acquisition of counseling techniques centered on the development of a helping relationship. Emphasis on communication skills including forms of questioning, responses and leads, non-verbal communication. Other topcis include delineation of the counselor role, ethics and confidentiality and making referrals. Extensive use of role playing and videotaping as learning approaches.

PSY 202 3 Credits As Demand Warrants
Psychology of Adjustment (3+0)
Application of psychological principles to the studeent's everyday life. Learn to analyze his/her behavior. Emphasis will be on the variety of ways people cope with stress, and what are the most adaptive ways of coping with that life brings.

PSY 210 3 Credits Alternate Spring
Cross-Cultural Psychology (3+0) s
A survey of the concepts, premises, and methods of cross-cultural psychology emphasizing its use in testing, extending, and refining psychological theories developed in Western settings. Topics include perceptions, cognition, social behavior, psychopathology, and social change as they relate to cultural variation. (Prerequisite: PSY 101. Next offered: 1989-90.)

PSY 230 3 Credits As Demand Warrants
Psychology of Adjustment (3+0) s
Study of the psychology of adjustment, growth, and creativity, including advances in personal psychology, understanding personality patterning, and an exploration of burgeoning techniques and methods for furthering creative potential. (Prerequisite: PSY 101. Next offered: 1989-90.)

PSY 240 3 Credits Fall and Spring
Developmental Psychology in Cross-Cultural Perspective (3+0) s
The development of the individual is examined from both a psychological and cross-cultural perspective. Key topics will be the development of cognition, personality, and social behavior with attention to relevant research on those cultures found in Alaska. (Prerequisite: PSY 101.)

PSY 245 3 Credits As Demand Warrants
Child Development (3+0)
(Same as ECHD 245)
Study of development from prenatal through middle childhood including the cognitive, emotional, social and physical aspects of the young child. Course includes child observations. Emphasis is on the roles of heredity and environment in the growth process. (Prerequisite: PSY 101 or permission of the instructor.)

PSY 250 3 Credits Fall and Spring
Introductory Statistics for Behavioral Sciences (3+0)
(Same as SOC 250)
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 101.)

PSY 255 3 Credits Fall
Foundations of Counseling I (3+0)
(Same as HMSV 255)
This course is a survey of counseling philosophy and the various types of counseling systems that are used in most settings. An examination of the appropriate approach and system match will be undertaken so that the student will be able to make intelligent decisions concerning which approach to use. Some of the approaches examined will be psychoanalysis, behavior therapy, and humanistic approaches. Offshoots of these approaches will be surveyed if they are in fairly wide use. Counseling ethics will be studied and ethical problems illustrated and discussed. (Prerequisites: PSY 101 and PSY 240 or permission of instructor.)

PSY 261 3 Credits As Demand Warrants
Counseling Skills II (3+0)
A continuation of Psy 161 to further develop counseling skills and increase sophistication in the application of skills. Topics include specific counseling strategies and techniques, goal-setting, termination issues and methods of self-critique for paraprofessional counselors. Extensive use in class of case study, role play and audio and video taping. (Prerequisite: PSY 161 or permission of instructor.)

PSY 262 2 Credits As Demand Warrants
Family Counseling Skills (2+0)
Concentration on practical counseling skills set against the backdrop of family therapy. Teaching of family therapists will be applied to the solution of problems of everyday living and those presented to local human service agencies. Students are encouraged to integrate theoretical learning with their own style. (Prerequisites: PSY 101, 161, or permission of instructor.)

PSY 267 3 Credits As Demand Warrants
Stress and the Family (3+0)
A study of family in the context of both producing and reacting to stress. Focus is on sources of stress from inside and outside the family system. Concentration is on the normal, gradual and cumulative life stressors experienced during the life cycle of the family as well as the extraordinary stressors which occur suddenly and which frequently overwhelm the family's ability to cope. (Prerequisite: PSY 101 or permission of instructor.)

PSY 304 3 Credits Fall
Personality (3+0) s
Psychological and social/cultural determinants of personality formation including appropriate theories in both areas. (Prerequisite: PSY 101.)

PSY 330 3 Credits Spring
Social Psychology (3+0) s
(Same as SOC 330)
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. Of special concern are those aspects of social interaction that have cultural and intercultural variation. (Prerequisite: PSY 101 or SOC 101 or junior standing.)

PSY 345 3 Credits Fall
Abnormal Psychology (3+0)
A study of abnormal behavior, its causes, treatment, and social impact. The major classifications of disorders are presented. (Prerequisite: PSY 101.)

PSY 350 3 Credits Alternate Spring
Comparative Psychology (3+0) n
An integrated multidisciplinary behavioral approach to the study of comparative psychology emphasizing the basic premises, causal factors, functional consequences and interrelationships, and synthesis of animal behavior and ethology in the development and maintenance of behavioral patterns extant within both individual organisms and social groups. (Prerequisites: PSY 101, BIOL 105-106 and/or permission of instructor. Next offered: 1990-91.)

PSY 356 3 Credits Spring
Foundations of Counseling II (3+0)
(Same as HMSV 356)
This course is a continuation of HMSV 350-Foundations of Counseling I. Specific counseling strategies will be studied in-depth such as crisis intervention, individual techniques such as the rational therapies and specific behavioral approaches. The role of the counselor in community education and consultation will be explored as will methods of promoting community change. Issues in cross-cultural counseling will be studied to include those likely to be encountered in Alaska. (Prerequisites: HMSV 255 or PSY 255.)

PSY 370 3 Credits Alternate Fall
Drugs and Drug Dependence (3+0) s
(Same as SOC 370.)
A multidisciplinary approach to the study of drugs and drug abuse emphasizing acute and chronic alcoholism, commonly abused drugs, law enforcement and legal aspects of drug abuse, medical uses of drugs, physiological aspects of drug abuse, psychological and sociological causes and manifestations of drug abuse, recommended drug education alternatives and plans, and the treatment and rehabilitation of acute and chronic drug users. (Prerequisite: PSY 101 or SOC 101 or permission of instructor. Next offered: 1990-91.)

PSY 380 3 Credits Alternate Fall
Human Behavior in the Arctic (3+0) s
A study of human behavior as it relates to cold climates. Emphasis will be placed on living systems in Alaska and behavioral characteristics that have to do with stress and isolation. Material will include structural design as related to behavioral research. (Prerequisite: PSY 101. Next offered: 1989-90.)

PSY 440 3 Credits Alternate Spring
Learning (3+0) s
Survey of theory and research on the fundamentals of learning. Topics to be covered include: animal learning, classical conditioning, instrumental learning, discrimination learning, biological constraints on learning, and cross-cultural differences in learning styles. (Prerequisite: PSY 101. Next offered: 1989-90.)

PSY 445 3 Credits Fall
Community Psychology (3+0) s
(Same as HMSV 445)
Community psychology foundations to include community assessment and consultation with regard to areas for study, surveys, evaluation of services, and use of results for programming. During the community consultation portion, education, prevention, and service issues are covered with particular attention given to rural and small community assessment and change, especially as it applied to Alaska. (Prerequisites: PSY 101, SOC 101, HMSV 201.)

PSY 450 4 Credits Spring
Experimental Psychology (2+6) s
An integrated approach to the study of experimental psychology. Emphasis will be placed on the research methodologies and techniques extant in the diverse areas of experimental psychology. Students will engage in the design, execution, and analysis of individual projects involving both animal and human subjects, which relate to fields of current research interest in psychology. (Prerequisites: PSY 101, PSY 250 or STAT 301, and CS course(s) strongly recommended and/or permission of instructor.)

PSY 460 4 Credits Alternate Fall
Physiological Psychology (3+3) n
An integrated multidisciplinary approach to the study of physiological psychology — neuroanatomy and neurophysiology — emphasizing the basic principles, cortical and subcortical organization, functional mechanisms, and the physical-chemical foundations extant in the physiological bases of behavior with special reference to such disciplines as neuroanatomy, neurochemistry, and electrophysiological measures employed in the study of behavior and brain activity; research methods and techniques, and extensive exploration into areas of current research interest, including brain dynamics, the neural bases of learning, the neural substrates of emotion and motivation, states of consciousness, and stress and psychosomatic relationships. (Prerequisite: PSY 101, BIOL 105-106 or BIOL 111-112 strongly recommended, or permission of instructor. Next offered: 1989-90.)

PSY 470 3 Credits Alternate Fall
Sensation and Perception (3+0) n
An integrated psychophysiological inquiry into the study of sensation and perception emphasizing the essential principles, functions and organization, fundamental mechanisms, and the structural complexity extant in the sensory physiology of the special sensory processes — audition, gustation, kinesthesis, olfaction, proprioception, somesthesis, and vision — as well as an examination of the theoretical models and systems of perception with special reference to the biological, cultural, developmental, hereditary, physiological, psychological, and social effects on the interpretation of perceptual and sensory phenomena. (Prerequisite: PSY 101, PSY 460, and BIOL 105-106 or BIOL 111-112 strongly recommended; and/or permission of instructor. Next offered: 1989-90.)

PSY 473 3 Credits Fall
Social Science Research Methods (3+0) s
(Same as SOC 473)
Techniques of social research: sampling, questionnaire construction, interviewing and data analysis in surveys; field and laboratory experiments, and attitude scaling. (Prerequisite: PSY 250 or SOC 250).

PSY 610 3 Credits Fall
Alcohol: Pharmacology and Behavior (3+0)

PSY 615 3 Credits As Demand Warrants
Drug Action: Physiology and Behavior (3+0)

PSY 618 3 Credits Spring
Community Treatment Alternatives (3+0)

PSY 620 3 Credits As Demand Warrants
Treatment of Drug and Alcohol Dependency (3+0)

PSY 625 3 Credits As Demand Warrants
Prevention of Alcohol and Drug Dependency (3+0)

PSY 630 3 Credits Fall
Community Psychology (3+0)

PSY 631 Credits Spring
Community Psychology: Cross-cultural Applications and the Ethics of Change (3+0)

PSY 635 3 Credits Spring
Field-Based Research Methods (3+0)

PSY 638 3 Credits Alternate Fall
Social Policy and Social Change (3+0)
(Same as SOC 638)

PSY 645 3 Credits Alternate Spring
Prevention Theories and Strategies (3+0)
(Same as SOC 645)

PSY 646 3 Credits As Demand Warrants
Consultation (3+3)

PSY 650 3 Credits Alternate Spring
Cross-Cultural Psychopathology (3+0)

PSY 655 3 Credits Spring
Healing: Implications for Clinical/Community Practice (3+0)

PSY 660 4 Credits Fall
Principles and Techniques of Individual Counseling (3+3)
(Same as COUN 623)

PSY 661 3 Credits Spring
Cross-Cultural Counseling (3+0)

PSY 662 3 Credits Alternate Spring
Transformational Development and Psychotherapy (3+0)

PSY 663 3 Credits Fall
Clinical Methods and Assessment (3+0)

PSY 664 3 Credits As Demand Warrants
Behavior Therapy (3+0)

PSY 665 3 Credits As Demand Warrants
Psychoanalytic Theory and Clinical Method (3+0)

PSY 666 3 Credits As Demand Warrants
Family and Network Therapy (3+0)

PSY 667 3 Credits As Demand Warrants
Existential Psychotherapy (3+0)

PSY 668 3 Credits Spring
Crisis Intervention (3+0)

PSY 674 3 Credits As Demand Warrants
Group Counseling (3+0)
(Same as COUN 624)

PSY 677 3 Credits As Demand Warrants
Psychological Assessment - Intelligence (3+0)

PSY 678 3 Credits As Demand Warrants
Psychological Assessment - Personality (3+0)

PSY 688 3 Credits Fall and Spring
Practicum in Community Psychology (2+7)

PSY 690 3-12 credits Fall and Spring
Internship in Community Psychology (0+40)

Religion

RELG 205 3 Credits As Demand Warrants
Introduction to the Bible (3+0) h
A study of the Bible as literature of ancient Israel and the early Christian Church.

RELG 211 Credits Arranged As Demand Warrants
Survey of Shamanism
An indepth survey of Shamanism with emphasis on North American and Arctic Shamanism. Understanding general concepts of Shamanism and an introduction to the traditional functions of Shamanism, past and present perceptions of Shamanism and the basic principles and beliefs related to Shamanism.

RELG 221 3 Credits As Demand Warrants
Religions of the World (3+0) h
A survey of the development of major religions of the Eastern and Western world including contemporary world religions.

Rural Development

RD 200 3 Credits Fall
Community Development in the North (3+0)
Examines rural community development efforts in Circumpolar countries and the impact of these efforts on Northern communities and indigenous peoples.

RD 255 3 Credits As Demand Warrants
Rural Alaska Land Issues (3+0)
The history and significance of ANCSA, ANILA and other land issues in rural areas of Alaska.

RD 265 3 Credits Fall
Perspectives on Subsistence in Alaska (3+0)
Examines the socio-economic, cultural, legal and political dimensions of subsistence lifestyles in Alaska.

RD 315 3 Credits Spring
Tribal People and Development (3+0) s
Comparative examination of socio-economic development processes as they impact tribal peoples in third and fourth world societies. Particular attention is given to the implications of these processes for Alaska Native people. (Prerequisites: Junior standing or permission of instructor.)

RD 300 3 Credits As Demand Warrants
Rural Development in a Global Perspective (3+0) s
A comparative and theoretical approach to the process of change and development in cross-cultural contexts, particularly in relation to their effects on rural communities. (Prerequisite: junior standing or permission of instructor.)

RD 325 3 Credits As Demand Warrants
Community Organization and Development Strategies (3+0) s
Examines community development/organizational strategies appropriate for a variety of institutional and community situations.

RD 338 3 Credits As Demand Warrants
Education and Economic Development (3+0)
(same as ED 338)
An examination of both theory and evidence linking varied forms of education to economic growth and development. A comparative approach is utilized to explore similarities and differences between rural Alaskan regional development and systematic nation-building efforts in developing countries. (Prerequisite: Permission of instructor.)

RD 350 3 Credits As Demand Warrants
Community Research and Planning Techniques (3+0)
Basic techniques and concepts associated with long range community level research, planning and evaluation, activities related to the needs of Native corporations, rural communities and the rural school districts, including practical experience in grant writing.

RD 375 3 Credits As Demand Warrants
Women and Development (3+0) s
The effect of modernization and development processes on the role of women in a variety of Third World and tribal world contexts as well as the increasingly important "new" role women play in these complex processes.

RD 400 3 Credits As Demand Warrants
Rural Development Internship
Structured experience in an appropriate educational, agency or corporate setting. An approved project required. Enrollment only by prior arrangement with the instructor.

RD 425 3 Credits As Demand Warrants
Cultural Impact Analysis (3+0)
An examination of the potential impacts of development projects on cultural systems, and then how we can use this information to shape the actual project in positive directions. Particular attention will be paid to data gathering and analysis techniques related to impact predictions. Students will be required to carry out an impact analysis as part of the course. (Prerequisite: RD 350 or permission of instructor.)

RD 450 3 Credits As Demand Warrants
Managing Community Development Projects and Programs (3+0)
Examines appropriate management and accountability approaches for small-scale, community-based programs and projects, particularly those found in rural and/or cross-cultural contexts. (Prerequisite: RD 325 or permission of instructor.)

RD 475 3 Credits As Demand Warrants
Rural Development Senior Project
Under faculty supervision, the student will be required to complete a major theoretical, research and/or applied project which relates the student's applied emphasis area to rural development considerations. (Prerequisite: Senior standing or permission of instructor.)

Russian

RUSS 075 3 Credits As Demand Warrants
RUSS 076 3 Credits As Demand Warrants
Conversational Russian I and II (3+0)
An introductory course for students who wish to acquire the ability to speak Russian. Students first learn to understand simple spoken language, then to speak simple Russian developing a beginning level of communicative competence in the language. (Prerequisite: RUSS 075 for 076.)

RUSS 101 5 Credits Fall
RUSS 102 5 Credits Spring
Elementary Russian I and II (5+0) h
Introduction to the language and culture: development of competence and performance in the language through understanding, recognition and use of linguistic structures, increasing emphasis on listening comprehension and speaking, basic vocabulary of approximately 750 words, exploration of the cultural dimension, implicitly through language, and explicitly through texts and audio-visual materials; use of Foreign Language Learning Center.

RUSS 201 4 Credits Fall
RUSS 202 4 Credits Spring
Intermediate Russian I and II (4+0) h
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 288 2 Credits Alternate Spring
Individual Study: Reading Russian h
Emphasis on expanding passive vocabulary and recognizing basic grammatical structures; modern Soviet texts. (Prerequisites: RUSS 201, equivalent training or permission of instructor. Recommended to be taken concurrently with RUSS 202. Next offered: 1989-90.)

RUSS 301 3 Credits Alternate Fall
RUSS 303 3 Credits Alternate Fall
Advanced Russian (3+0) h
Discussions and essays on more difficult subjects or texts: translations, stylistic exercises, and special grammatical problems. Conducted in Russian. (Prerequisite: RUSS 202 or instructor's permission. Next offered: RUSS 301, 1989-90; RUSS 303, 1990-91.)

RUSS 387 2 Credits Alternate Fall
Individual Study: Semantics h
Systematic expansion of passive and active vocabulary through analysis of word fields, series of synonyms and antonyms, principles of word formation, derivation, composition, etc. (Prerequisite: Two years of Russian or permission of instructor. Next offered: 1989-90.)

RUSS 432 3 Credits Spring
Studies in Russian Literature and Civilization (3+0) h
Intensive study of authors, literary movements, periods, and/or genres. Analysis of cultural material other than texts. Conducted in Russian. Student may repeat course for credit when topics vary. (Prerequisites: RUSS 301 or 303 or equivalent, and at least sophomore standing, or permission of instructor.)

RUSS 487 2 Credits Alternate Fall
Individual Study: Translation (2+0) h
Expansion of vocabulary and grammatical knowledge, emphasis on understanding precise shades of meaning, stylistic, artistic expression and cultural values in language; literary and non-literary tests. Conducted in Russian. Student may repeat course for credit if materials vary. (Prerequisites: RUSS 301 or 303 or equivalent and at least sophomore standing, or permission of instructor. Next offered: 1990-91.)

Science Application

Science application courses are not offered on the Fairbanks campus.

SCIA 100 1 Credits As Demand Warrants
Introducing Astronomy (1+0)
Course on the history of astronomy, the structure of the universe and its parts and the techniques used for studying the universe. Students will use various optical instruments to observe celestial bodies.

SCIA 107 1 Credit As Demand Warrants
Rock Identification (1+0)
A study of the physical properties of igneous, sedimentary and metamorphic rocks. These properties will be applied toward sight identification of rocks with emphasis on rocks found on the Seward Peninsula.

SCIA 109 1 Credit As Demand Warrants
Mineral Identification (1+0)
A study of the physical and field identifiable chemical properties of rocks and minerals. Emphasis will be on minerals found on the Seward Peninsula.

SCIA 130 1 Credit As Demand Warrants
Moose Ecology (1+0)
Using the natural history of moose, the ecological concepts of energy flow, nutrient cycling, food webs and population dynamics are presented. Special attention is given to the Seward Peninsula moose population and the factors that are considered in making wildlife management decisions.

SCIA 150 1 Credit As Demand Warrants
Subarctic Horticulture (0+3)
General study of horticultural techniques in a subarctic environment. Emphasis on development and care of greenhouses and gardens in the Nome area. Topics covered will be soils, plant propagation, disease and insect control, variety selection, fertilization, greenhouse construction and care and gardening techniques.

SCIA 161 1 Credit As Demand Warrants
Birds of Alaska (1+0)
The biology and identification of birds including behavior, anatomy, physiology, ecology, systematics and field identification. Birds of the Seward Peninsula will be emphasized.

SCIA 230 2 Credits As Demand Warrants
Biology and Management of King Crab in Norton Sound (1+3)
Study of the biology and management of King Crab in Norton Sound. Anatomy, physiology and ecology of the King Crab will be covered. Selected topics in scientific methodology, field biologist's duties and problems of fishery management will be presented. Students will work with Alaska Department of Fish and Game Biologists who are conducting an ongoing study of Norton Sound King Crab. Six student limit in lab; may register for lecture portion only.

SCIA 251 3 Credits As Demand Warrants
Horticultural Science in a Subarctic Environment (2+3)
Topics studied are plant anatomy, physiology, genetics, ecology, propagation, insect and disease control, soils, greenhouse construction and care and gardening techniques. Students will develop and carry out a horticultural research project in the Nome area.

Social Work

SWK 103 3 Credits Fall and Spring
Social Work in the Human Services (3+0)
Introduction to the profession of social work and the human services delivery system. Examines the historical development of social work focusing on the knowledge, values, and skills that characterize the social worker. Provides an orientation to the context for social work, including the diversity of human needs, human services, social policy and legislation which constitute society's response to social problems. Services, programs, and career opportunities within rural and urban Alaska, as well as nationally, are discussed.

SWK 225 2 Credits As Demand Warrants
Case Management (2+0)
(same as HMSV 225)
Introduction to basic knowledge and skills needed to develop service plans in human service work and to maintain appropriate case records. Legal and ethical issues in case management are considered and discussed. (Prerequisite: PSY 101, SOC 101 or permission of instructor.)

SWK 306 3 Credits Spring
Social Welfare: Policies and Issues (3+0)
Social policies and how they effect the delivery of social services. Factors that have influenced the development of the current social service system and its place in the total social structure. Analysis of the dilemmas which develop in a welfare system attempting to deal with rapid social change. Exploration of alternative approaches to the solution of social problems and possible future developments in the social service system. (Prerequisite: HMSV 201.)

SWK 320 3 Credits Spring
Rural Social Work (3+0)
Preparation for practice in rural areas where there is a need for more than one delivery system, an understanding of rural customs, and a scarcity of resources. Emphasis will be on preparation for practice nationally with unique features of Alaska incorporated at key points. (Prerequisites: SWK 103, SOC 101 or PSY 101.)

SWK 360 3 Credits Fall
Child Abuse and Neglect (3+0)
This course is designed to enable participants to identify and understand the dynamics, implications and treatments of child abuse and neglect for individuals and families in rural and urban Alaska. (Prerequisites: SWK 103 or permission of instructor.)

SWK 442 3 Credits Fall
Human Behavior in the Social Environment (3+0)
This course presents theoretical frameworks considered useful for organizing knowledge about the understanding of personality development and social behavior of individuals. The course will encompass the study of the life cycle, including the processes that shape the individual differences. (Prerequisites: SWK 103, SOC 101, PSY 240, senior standing, social work major.)

SWK 460 3 Credits Fall
Social Work Practice I (3+0)
Development of beginning skills in interviewing and helping processes with individuals, families and groups. Application of intervention strategies and techniques made to case materials, primarily in family and child welfare services. Contracting, case management and social brokerage are discussed. (Prerequisites: SWK 306, social work major, senior standing; must be taken concurrently with SWK 461.)

SWK 461 6 Credits Fall
Practicum in Social Work I
Application of knowledge and skills to practice in agency setting as practitioners in problem-solving process, including problem assessment, planning and negotiating contracts, implementation and goal attainment and termination and evaluation. Beginning generic skills are practiced in work with individuals, groups and families. Students complete 200 hours of direct practice in an approved agency under the supervision of a field instructor. (Prerequisites: SWK 306, senior standing, social work major; must be taken concurrently with SWK 460.)

SWK 463 3 Credits Spring
Social Work Practice II
Further development of student's knowledge of direct practice with clients and development of beginning skills in community work including social planning. Heavy emphasis placed on aspects of rural practice such as utilization of community associations and the informal helping network. (Prerequisites: SWK 460, SWK 461, senior standing, social work major; must be taken concurrently with SWK 464.)

SWK 464 6 Credits Spring
Practicum in Social Work II
Continuation of SWK 461; further experience of direct practice with client groups, development and use of beginning skills in community work including social planning, indirect or macro-social work methods focus. Emphasis placed on social work methods adapted to rural and cross-cultural settings. Students complete 200 hours of practice in an approved agency under the supervision of a field instructor. (Prerequisites: SWK 460, SWK 461, senior standing, social work major; must be taken concurrently with SWK 463.)

SWK 484 3 Credits As Demand Warrants
Seminar in Social Work Practice Areas (3+0)
The course covers problem areas in which social work is involved. Allows students to learn application of basic social work skills in special settings. Problem areas are covered separately in different semesters. Content will be announced in class schedule prior to each semester offered. Course may be repeated for credit when topic varies. (Prerequisites: SWK 103, junior or senior standing or permission of instructor.)

Sociology

SOC 101 3 Credits Fall and Spring
Introduction to Sociology (3+0) s
An introduction to the science of the individual as a social being, emphasizing the interactional, structural, and normative aspects of social behavior. An attempt is made to construct a cross-cultural framework in understanding and predicting human behavior. (Also available via television as a self-paced, computer-aided course; special telecourse fee: $20.00.)

SOC 102 3 Credits Fall and Spring
Social Institutions (3+0) s
A continuation of SOC 101: application of the concepts learned by developing and carrying out short surveys of sociological phenomena. Institutions of society, such as family, political and economic order, are examined, including their operation in the Alaska rural and cross-cultural milieu. (Also available via television as a self-paced, computer-aided course; special telecourse fee: $20.00. Prerequisite: SOC 101.)

SOC 160 3 Credits As Demand Warrants
Current Woman (3+0)
Explores both past history and current influences on Feminist Movement. Changing personal, sexual, family, economic and political roles of women. Emphasizes psychological impact of these changes on women's lives today.

SOC 201 3 Credits Fall
Social Problems (3+0) s
A study of the major problems facing contemporary society, including analysis of factors giving rise these problems. Emphasis is given to cross-cultural differences in Alaska and other parts of the world.(Also available via television as a self-paced, computer-aided course; special telecourse fee: $20.00.)

SOC 207 3 Credits As Demand Warrants
Population and Ecology (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.

SOC 242 3 Credits Spring
The Family: A Cross-Cultural Perspective (3+0) s
The study of contemporary patterns of marriage and family relationships Various approaches such as the developmental, systems, and social psychological are used to analyze these relationships. The family is followed through the stages of the family life cycle, such as mate selection, marriage, early marital interaction, parenthood, the middle and later years, and possible dissolution. Attention is given to cross-cultural differences in Alaska as well as in other parts of the world. (Prerequisites: SOC 101 or permission of instructor.)

SOC 250 3 Credits Fall and Spring
Introductory Statistics for Behavioral Sciences (3+0)
(Same as PSY 250.)
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 301 3 Credits Spring
Rural Sociology (3+0) s
Application of the principles of sociology to the study of rural social systems in the U. S. and abroad. Topics covered include: societal processes, changing values, economic development, demographic change, agrarian reforms, planned change, and rural community networks. Part of the focus will be on the rural communities of Alaska. (Prerequisites: SOC 101, SOC 103 or permission of instructor.)

SOC 307 3 Credits Spring
Demography (3+0) s
The study of formal demographic variables such as Fertility, Mortality, and Migration and their interaction with social demographic variables like social class, religion, race, residence, attitudes, and values. The course also focuses on the Alaskan population dynamics.

SOC 309 3 Credits As Demand Warrants
Urban Sociology (3+0) s
Origin and development of urban society as an industrial-ecological phenomenon; the trends of migration and metropolitanism with futuristic implications; and the rural-urban dichotomy in the Alaskan content. (Next offered: 1990-91.)

SOC 310 3 Credits Alternate Spring
Sociology of Later Life (3+0) s
An analysis of the social status and role of the aging in America, with comparisons with elderly in Alaska as well as those in other societies. (Prerequisite: SOC 101. Next offered: 1990-91.)

SOC 330 3 Credits Spring
Social Psychology (3+0) s
(Same as PSY 330)
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. Of special concern are those aspects of social interaction that have cultural and intercultural variation. (Prerequisites: SOC 101, PSY 101.)

SOC 335 3 Credits Fall
Sociology of Deviant Behavior (3+0)
A study of the causes of deviant behavior, both criminal and non-criminal, with emphasis on the nature of social interaction and an examination of the social control groups and institutions. (Prerequisite: SOC 101.)

SOC 345 3 Credits Fall
Sociology of Education (3+0)
(Same as ED 345)
Examination of the ways in which social, political, and economic forces influence what happens in schools with focus on how the oranization of schools affects what teachers can do in the classroom, how peer groups affect student learning, and how national political and economic concerns determine what becomes an educational issue. (Prerequisites: SOC 101 and junior standing.)

SOC 363 3 Credits Fall
Social Stratification (3+0) s
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. Also includes a comparative study of class and caste in India and the United States. (Prerequisite: SOC 101.)

SOC 370 3 Credits Alternate Fall
Drugs and Drug Dependence (3+0) s
(Same as PSY 370)
A multidisciplinary approach to the study of drugs and drug abuse emphasizing acute and chronic alcoholism, commonly abused drugs, law enforcement and legal aspects of drug abuse, medical uses of drugs, physiological aspects of drug abuse, psychological and sociological causes and manifestations of drug abuse, recommended drug education alternatives and plans, and the treatment and rehabilitation of acute and chronic drug users. (Prerequisite: PSY 101 or SOC 101 or permission of instructor. Next offered: 1989-90.)

SOC 402 3 Credits Spring
Theories of Sociology (3+0) s
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: SOC 101.)

SOC 405 3 Credits As Demand Warrants
Social Change (3+0) s
Philosophy of change and its affiliation to socio-cultural change in terms of history, technology, axiology, and social movement. (Prerequisites: SOC 101, 102 or permission of instructor. Next offered: 1990-91.)

SOC 407 3 Credits **Alternate Fall**
Formal Organization (3+0) s
Theoretical and analytical approaches to the study of contemporary complex formal organizations, including their coordination, status and role interrelationships, and their diverse publics. Formal organizations unique to Alaska's multicultural population will be considered. (Prerequisite: SOC 101. Next offered: 1990-91.)

SOC 408 3 Credits **Alternate Fall**
American Minority Groups (3+0) s
An examination of the status of minority groups annd intergroup relations in America, including changes in sociological, economic and political status. Theories and concepts of minority role behavior and intergroup relatives are applied to American and Alaskan racial and ethnic groups. (Prerequisite: SOC 101. Next offered: 1989-90.)

SOC 473 3 Credits **Fall**
Social Science Research Methods (3+0) s
(Same as PSY 473.)
Techniques of social research: sampling, questionnaire construction, interviewing and data analysis in surveys; field and laboratory experiments, and attitude scaling. (Prerequisite: PSY 250 or SOC 250.)

SOC 638 3 Credits **Alternate Fall**
Social Policy and Social Change (3+0)
(Same as PSY 638.)

SOC 645 3 Credits **Alternate Spring**
Prevention Theories and Strategies (3+0)
(Same as PSY 645.)

Spanish

(For studying in Mexico, see International Programs.)

SPAN 075 3 Credits **As Demand Warrants**
SPAN 076 3 Credits **As Demand Warrants**
Conversational Spanish I and II (3+0)
An introductory course for students who wish to acquire the ability to speak Spanish. Students first learn to understand simple spoken language, then to speak simple Spanish developing a beginning level of communicative competence in the language. (Prerequisite: SPAN 075 for 076.)

SPAN 101 5 Credits **Fall**
SPAN 102 5 Credits **Spring**
Elementary Spanish I and II (5+0) h
Introduction to the language and culture: development of competence and performance in the language through understanding, recognition and use of linguistic structures, increasing emphasis on listening comprehension and speaking, basic vocabulary of approximately 1000 words, exploration of the cultural dimension, implicitly through language and explicitly through texts and audio-visual materials; use of Foreign Language Learning Center.

SPAN 105 3 Credits **As Demand Warrants**
Beginning Spanish I (3+0) h
Basic conversational skills with appropriate grammar and vocabulary.

SPAN 106 3 Credits **As Demand Warrants**
Beginning Spanish II (3+0) h
Continuation of Spanish I with increased emphasis on listening comprehension and speaking. Development of vocabulary and linguistic structures. Cultural aspects are included.

SPAN 113 3 Credits **As Demand Warrants**
Spanish for Tourists (3+0)
For students with no background in Spanish who wish to learn useful phrases and basic language. Cultural and travel information on Spain and Latin America.

SPAN 201 3 Credits **Fall**
SPAN 202 3 Credits **Spring**
Intermediate Spanish I and II (3+0) h
Continuation of SPAN 102. Increasing emphasis on reading ability and culture material. Conducted in Spanish. (Prerequisite: SPAN 102 or equivalent.)

SPAN 288 2 Credits **Spring**
Individual Study: Reading Spanish h
Emphasis on rapid expansion of passive vocabulary and immediate recognition of frequent idiomatic expressions and grammatical structures, development of true reading skill, and modern literary and/or non-literary texts. (Prerequisites: SPAN 201, equivalent training or permission of instructor. Recommended to be taken concurrently with SPAN 202.)

SPAN 301 3 Credits **Alternate Fall**
SPAN 303 3 Credits **Alternate Fall**
Advanced Spanish (3+0) h
Discussions and essays on more difficult subjects or texts, translations, stylistic exercises, and special gramatical problems. Conducted in Spanish. (Prerequisite: SPAN 202 or equivalent. SPAN 301 next offered: 1989-90; SPAN 303: 1990-91.)

SPAN 387 2 Credits **Alternate Fall**
Individual Study: Semantics h
Systematic expansion of passive and active vocabulary through analysis of word fields, series of synonyms and antonyms, principles of word formation, derivation, composition, etc. Conducted in Spanish. (Prerequisite: SPAN 202 or permission of instructor. Next offered: 1989-90.)

SPAN 432 3 Credits **Spring**
Studies in Hispanic Literature and Culture (3+0) h
Intensive study of authors, literary movements, periods, and/or genres. Analysis of cultural material other than texts. Conducted in Spanish. Student may repeat course for credit when topics vary. (Prerequisite: SPAN 301 or 303 or equivalent and at least sophomore standing or permission of instructor.)

SPAN 487 2 Credits **Alternate Fall**
Individual Study: Translation of Texts
Expansion of vocabulary and grammatical knowledge; emphasis on understanding precise shades of meaning, stylistics, artistic expression and cultural values in language, and literary and non-literary texts. Student may repeat course for credit if materials vary. Conducted in Spanish. (Prerequisite: SPAN 301 or 303 or equivalent and at least sophomore standing, or permission of instructor. Next offered: 1990-91.)

SPAN 488 3 Credits **As Demand Warrants**
Individual Study: Senior Project h
Designed to permit the student to demonstrate ability to work with the language and the culture through the analysis and presentation, in the language, of a problem chosen by the student in consultation with the department. The student must apply for senior project and submit a project outline by the end of the 6th week of the semester preceding the semester of graduation. Offered normally in the semester preceding the student's graduation. Conducted in Spanish. (Prerequisite: At least 10 credits in upper division Spanish or permission of instructor.)

Speech Communication

Because of enrollment pressures, it is Department of Speech and Drama policy to drop from the class roll students who fail to attend the first two meetings of a basic course (SPC 121, 131 and 141) even if they have preregistered.

SPC 111 3 Credits **As Demand Warrants**
Fundamentals of Oral Communication (3+0) o
An introduction to the concepts and processes of oral communication. Focuses on increased understanding of and effective performance in common interpersonal, group, and public communication situations.

SPC 121 3 Credits **Fall and Spring**
Fundamentals of Oral Communication: Interpersonal Emphasis (3+0) o
An introduction to the communication process. Focuses on the core concepts of listening, perception, verbal and non-verbal communication, and organizing materials. Emphasizes increased understanding of and effective performance in TWO-PERSON COMMUNICATION SITUATIONS.

SPC 131 3 Credits **Fall and Spring**
Fundamentals of Oral Communication: Small Group Emphasis (3+0) o
An introduction to the communication process. Focuses on the core concepts of listening, perception, verbal and non-verbal communication, and organizing material. Emphasizes increased understanding of and effective performance in SMALL GROUP COMMUNICATION SITUATIONS.

SPC 141 3 Credits **Fall and Spring**
Fundamentals of Oral Communication: Public Speaking Emphasis (3+0) o
An introduction to the communication process. Focuses on the core concepts of listening, perception, verbal and non-verbal communication, and organizing material. Emphasizes increased understanding of and effective performance in PUBLIC SPEAKING SITUATIONS.

SPC 211 3 Credits As Demand Warrants
Voice and Diction (2+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 recording. (Prerequisite: Any 100 level oral communication course or permission of instructor.)

SPC 231 3 Credits Alternate Years
Business and Professional Communication (3+0) s
A pre-professional course designed to help business, professional, and communication students enhance their oral communication skills, focusing on superior/subordinate communication, interviewing, conference and meeting techniques, and presentational speaking. (Prerequisites: Any 100 level oral communication course or permission of instructor. Next offered: Spring 1990.)

SPC 251 3 Credits Alternate Years
Argumentation and Debate (3+0)
Principles and practices in contemporary debate. Review and analysis of relevant argumentation principles as applied to a debate situation. Practice in preparation, defense, and refutation of cases developed in reference to a given debate resolution. (Prerequisite: Any 100 level oral communication course or permission of instructor. Next offered: Fall 1990.)

SPC 261 3 Credits Alternate Years
Oral Interpretation (3+0) h
Interpretive reading of a variety of literary forms. Focuses on the development of (1) intellectual and emotional responsiveness to literature for increased understanding and appreciation, and (2) expressional skills of voice and body for effective oral interpretation of literature. (Prerequisites: Any 100 level oral communication course, THR 221, or permission of instructor. Next offered: Fall 1989.)

SPC 282 3 Credits Alternate Years
Communication Research Methods (3+0)
Empirical and rhetorical-critical research methodologies employed in communication studies, including assumptions, key issues, and applications. (Prerequisites: Any 100 level oral communication course or permission of instructor. Next offered: Spring 1991.)

SPC 320 3 Credits Alternate Years
Communication and Language (3+0)
The role of language and meaning in human communication. (Prerequisite: Any lower division speech communication course or permission of instructor. Next offered: Spring 1990.)

SPC 321 3 Credits Alternate Years
Nonverbal Communication (3+0) s
The role of non-lexical behavior in human communication. Includes consideration of the roles of space, physical environment, physical appearance and dress, kinesics, facial expression, and non-lexical vocal behavior. (Prerequisite: Any lower division Speech Communication course or permission of instructor. Next offered: Fall 1989.)

SPC 322 3 Credits Alternate Years
Interpersonal Communication (3+0) s
Study of humanistic approaches to interpersonal communication. Emphasis is on dialogic/transactive communication within two person situations. Indepth exploration of theoretical materials related to many types of relational interchanges. (Prerequisite: Any 100 level oral communication course or permission of instructor. Next offered: Fall 1989.)

SPC 330 3 Credits Alternate Years
Intercultural Communication (3+0) s
The nature and the sources of problems in communication that may arise when persons with different cultural backgrounds interact. Special emphasis on problems in intercultural communication in Alaska. (Prerequisite: Any lower division Speech Communication course or permission of instructor. Next offered: Fall 1990.)

SPC 331 3 Credits Alternate Years
Group Communication (3+0) s
Current research and theory in intergroup and intragroup relations. Topics will include the study of leadership, power, group structure, participation, and conflict. (Prerequisites: Any 100 level Speech Communication course or permission of instructor. Next offered: Fall 1990.)

SPC 335 3 Credits Alternate Years
Organizational Communication (3+0) s
The scope and nature of communication networks within and between organization, concentrating on message flow, interaction patterns, and environmental-structural interactions in organizational settings. (Prerequisite: Completion of one lower division Speech Communication course or permission of the instructor. Next offered: Spring 1990.)

SPC 342 3 Credits Alternate Years
Advanced Public Speaking (3+0) s
Advanced opportunities to study and critique methods of speech preparation and delivery. Performance and criticism of original speeches to develop understanding of sophisticated techniques of public discourse. (Prerequisite: Any lower division Speech Communication course or permission of the instructor. Next offered: Spring 1991.)

SPC 425 3 Credits Alternate Years
Communication Theory (3+0) s
Study of theories of human communication, as well as of the nature of inquiry into human communication phenomena. Issues covered include the nature of communication as a discipline, critical and scientific inquiry, and major paradigms or perspectives within which communication theories are created. (Prerequisite: Any 300 level Speech Communication course or permission of the instructor. Next offered: Fall 1989.)

SPC 441 3 Credits Alternate Years
Persuasion (3+0) s
Examination of communication situations which involve attempts to modify the beliefs, attitudes, values, intentions, or behaviors of another individual or group of individuals. Explores the process, methods, and ethics of attempts to affect change via persuasive communication. (Prerequisite: Any 300 level Speech Communication course or permission of the instructor. Next offered: Spring 1991.)

SPC 443 3 Credits Alternate Years
Rhetorical Theory (3+0) s
Critical analysis of Plato, Aristotle and Sophists on rhetoric, tracing the development of rhetorical theory from inception in 500 B.C. to current practices. Significant contributions by important scholars of rhetoric will be studied. (Prerequisite: Any 300 level oral communication course or permission of the instructor. Next offered: Spring 1990.)

SPC 475 3 Credits Alternate Years
Speech Communication in Education and Training (3+0)
Issues pertaining to the research and development of instructional units in speech communication for educational and professional courses. Issues covered include student needs analysis, syllabi development, behavioral objectives, unit packages, competency, models, and program integration. (Prerequisites: Any 300 level Speech Communication course or permission of instructor. Next offered: Fall 1990.)

SPC 482 3 Credits Alternate Years
Seminar in Speech Communication (3+0)
Current trends and theory in key-areas of the discipline of Speech Communication are examined. Students will concentrate their research in their speciality area while examining selected topics in all the areas. (Prerequisite: Any 300 level Speech Communication course or permission of instructor. Next offered: Fall 1989.)

Statistics

STAT 301 3 Credits Fall and Spring
Elementary Probability and Statistics (3+0)
Descriptive statistics, frequency distributions, sampling distributions, elementary probability, estimation of population parameters, hypothesis testing (one and two sample problems), correlation, simple linear regression, and one-way analysis of variance. Parametric and nonparametric methods. (Prerequisites: MATH 107 and junior standing or consent of instructor)

STAT 351 2 Credits Spring
Statistical Computing Packages (1+3)
A study of the use of BMDP, SPSS, MINITAB, IMSL, and other miscellaneous statistical computing packages. Comparison of output for similar analyses. (Prerequisite: STAT 301.)

STAT 400 3 Credits Fall
Statistics (3+0)
A calculus-based course emphasizing applications. Topics include: probability, point and interval estimation including maximum likelihood, one and two sample hypothesis tests including likelihood ratio rests, simple linear regression, and one-way analysis of variance. A student may not use STAT 301 and STAT 400 to meet the requirement of a year's sequence course in statistics. (Prerequisites: MATH 200, 272, or 162.)

STAT 401 4 Credits — Fairbanks, Fall; Juneau, As Demand Warrants
Regression and Analysis of Variance (3+3)
A thorough study of multiple regression including multiple and partial correlation, the extra sum of square principle, indicator variables, and model selection techniques. Analysis of variance and covariance for multifactor studies in completely random, randomized complete block, nested designs, multiple comparisons and orthogonal contrasts. (Prerequisite: STAT 301 [J STAT 373].)

STAT 402 3 Credits — Fall and Spring
Scientific Sampling (2+3)
Sampling methods, including simple random, stratified and systematic; estimation procedures, including ratio and regression methods; special area and point sampling procedures; optimum allocation. (Prerequisite: STAT 301)

STAT 461 3 Credits — Alternate Spring
Applied Multivariate Statistics (3+0)
A study of multivariate statistical methods of estimation and hypothesis testing, multivariate normality and its assessment, multivariate one and two sample tests, confidence regions, multivariate analysis of variance, discrimination and classification, principal components, factor analysis clustering techniques, and graphical presentation. Statistical computing packages utilized in assignments. (Prerequisites: STAT 401 or consent of instructor. Next offered: 1989-90.)

STAT 602 3 Credits — Fairbanks and Juneau As Demand Warrants
Experimental Design (3+0)

STAT 621 3 Credits — Fairbanks, Alternate Fall; Juneau, As Demand Warrants
Distribution-Free Statistics (3+0)

STAT 640 3 Credits — Fairbanks and Juneau As Demand Warrants
Exploratory Data Analysis (2+2)

STAT 661 3 Credits — Fairbanks and Juneau As Demand Warrants
Sampling Theory (3+0)

STAT 680 4 Credits — Alternate Fall
Data Analysis in Biology (3+3)
(Same as BIOL 680)

Note: The following courses are statistical in orientation. A course description and listing of prerequisites may be found in the appropriate departmental course listings.

ANTH 421 — Analytical Techniques
BA 360 — Operations Management
BA 606 — Quantitative Analysis
BA 684 — Quantitative Methods for Management
GEOS 430 — Statistical and Data Analysis in Geology
ECON 226 — Introduction to Statistics for Economics and Business
ECON 227 — Statistical Methods
ECON 626 — Econometrics
ESM 621 — Operations Research
MATH 371 — Probability
MATH 408 — Mathematical Statistics
PSY 250 — Introduction to Statistics for Behavioral Sciences
FISH 630 — Quantitative Fisheries Science

Theater

THR 101, 201
THR 301, 401 1-3 Credits — Fall and Spring
Theater Practicum (0+Var.) h
Participation in Drama Workshop or lab production as performer or technical staff member. Graded pass/fail only. (Credit in this course may not be applied to a major program in theater.)

THR 121 3 Credits — Fall
Fundamentals of Acting (3+0) h
Basic stage acting techniques for persons with little or no prior acting experience. Emphasis will be given to develop physical, emotional and imaginative awareness. Scene work fundamentals introduced.

THR 161 3 Credits — Fall
Introduction to Tuma Theatre (3+0) h
(Same as ANS 161)
Introduction to the development and performance of original and traditional theatrical works derived from various Alaska Native cultural heritages and experiences. This course is a prerequisite for ANS/THR 361, Advanced Tuma Theatre and for membership in the Tuma Theatre touring company.

THR 211 3 Credits — Fall and Spring
Theater Appreciation (3+0) h
A guide to the richer appreciation of theater through a study of the main periods, styles and playwrights from the classical period to the present.

THR 221 3 Credits — Fall
Intermediate Acting (1+4) h
Continued development of physical, emotional and imaginative awareness. Text and character analysis, scene and monolog study and presentation. Introduction to improvisation. (Prerequisite: THR 121 or permission of the instructor.)

THR 225 3 Credits — Alternate Spring
Movement for the Actor (1+4) h
Principles of stage movement, body awareness, and control as explored through analysis, exercise, study of historical dance and scene work. (Next offered: 1989-90.)

THR 241 3 Credits — Fall
Basic Stagecraft (2+2) h
Materials of scene construction and painting and their use.

THR 321 3 Credits — Alternate Fall
Advanced Acting I (1+4) h
Refinement of physical, emotional and imaginative awareness. Introducing a variety of character building methods. Study and performance of scenes and short plays. Introduction of audition techniques. (Prerequisite: THR 221, or permission of the instructor. Next offered: 1990-91.)

THR 325 3 Credits — Alternate Fall
Theater Speech (2+2) h
Vocal techniques for actors. Standard stage diction and foreign dialects. (Prerequisite: THR 221 or permission of instructor. Next offered: 1989-90.)

THR 331 3 Credits — Alternate Spring
Fundamentals of Stage Direction (1+4) h
Introduction to the history, theory, basic concepts of stage direction, interpretative script analysis, creative visualization, conceptualization, use of space, working with actors and designers. Direction of short scenes and plays. (Prerequisite: THR 221 or premission of the instructor. Next Offered: 1990-91.)

THR 341 3 Credits — Alternate Years
Intermediate Stagecraft (2+2) h
An examination of the less common scenic materials with methods and techniques for their use. (Students will spend approximately $40 for materials.) (Prerequisite: THR 241 or permission of instructor. Next offered: 1990-91.)

THR 343 3 Credits — Alternate Fall
Scene Design (3+0) h
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. Students will spend approximately $40 for materials. Next offered: 1990-91.)

THR 347 3 Credits — Alternate Spring
Lighting Design (3+0) h
Principles and techniques of theatrical lighting design. The student will conduct practical experiments and design projects applying the experience gained from the experiments. (Prerequisite: THR 343 or permission of the instructor. May be taken concurrently with THR 343. Students will spend approximately $40 for materials. Next offered: 1990-91.)

THR 351 3 Credits — Spring
Makeup for Theater (1+4) h
Theatrical makeup for actors, teachers, directors, and other theater workers; makeup materials and use, straight and character makeup, illusory and plastic relief, national types, and influence of lighting. (Students will spend approximately $85 for materials.) (Prerequisite: Any lower division theater course or permission of the instructor.)

THR 354 3 Credits — Fall
Costume Construction and Design (3+0) h
The processes of research, design, and construction of period and modern clothing for the stage. The student will research and design projects representative of specific periods of dress, as well as be given practical experience in the areas of pattern drafting, theatrical construction methods, and drawing and rendering techniques. (Prerequisite: THR 211 or permission of the instructor.)

THR 355 3 Credits Alternate Spring
History of Stage Costume (3+0) h
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. (Prerequisite: THR 211 or permission of instructor. The student is expected to have basic knowledge of theater practice and the interpretation of dramatic literature. Next offered: 1990-91.)

THR 361 3 Credits Fall
Advanced Tuma Theatre (3+0) h
(Same as ANS 361)
Continuation of ANS/THR 161 with emphasis on performance of previously prepared materials. Rehearsals during the first half of the semester will be followed by local area performances. Upon successful completion of the course, students will be eligible for the Tuma Theatre Company's spring and summer tours (see THR 101-401). (Prerequisites: ANS/THR 161 and one of the following: THR 221, THR 241, THR 343, THR 347 or permission of instructor.)

THR 411 3 Credits Alternate Years
Theater History I (3+0) h
Intensive examination of theatrical form and practice from its origins in storytelling and ritual through the French Neo-classic Theater. (Prerequisites: Junior standing and THR 211 or permission of instructor. Next offered: 1989-90.)

THR 412 3 Credits Alternate Years
Theater History II (3+0) h
Intensive examination of theatrical form and practice from the English Restoration through the present. (Prerequisites: Junior standing and THR 211 or permission of instructor. Next offered: 1990-91.)

THR 413 3 Credits Alternate Fall
Playscript Analysis (3+0) h
Intensive investigation of the structure of playscripts designed to develop skills in analysis and interpretation for performance. (Prerequisites: Junior Standing, THR 211 or permission of instructor. Next offered: 1989-90.)

THR 421 3 Credits Alternate Fall
Advanced Acting II (1+4) h
Introduction of acting techniques for periods and styles. Intensive scene and monologue work. Introduction of ensemble work. Public performance of short plays. Intensive audition work. (Prerequisite: THR 221 or permission of the instructor. Next offered: 1991-92.)

THR 435 3 Credits Alternate Spring
Advanced Stage Direction (1+4) h
Study of major theories and current trends in stage direction. Working with different styles, periods and stage configurations. Emphasis on practical preparation for production: from concept to execution of a one act play for public performance. (Prerequisite: THR 331 or permission of instructor. Next offered: 1989-90.)

THR 456 3 Credits Alternate Spring
Intermediate Costuming (3+0) h
Examination of theatrical costuming materials and methods and the continuation of the study of period styles. Special projects concerning drafting, construction, composition and design. (Prerequisites: THR 211, THR 354 or permission of instructor. Next offered: 1990-91.)

THR 471 3 Credits Alternate Years
Methods in Secondary Theatre Educaation (3+0)
Principles and methods of teaching theatre in junior and senior high school with emphasis on philosophies, management, objectives, and teaching techniques for classroom and extracurricular theatre activities. Includes development and implementation of specific unit packages and rehearsal methods. (Prerequisite: THR 211 or permission of instructor. Next offered: Fall 1990.)

Trades and Technology

Trades and technology courses are not offered on the Fairbanks campus.

TTCH 101 2 Credits As Demand Warrants
Machine Woodworking I (2+0)
Introduction to woodworking power machines (circular saw, jointer, radial arm saw), joints, fasteners, and different stains and finishes used on wood.

TTCH 105 1 Credit As Demand Warrants
Basic Electrical Wiring (1+0)
Familiarizes the student with fundamental skills and career opportunities in electrical wiring.

TTCH 106 3 Credits As Demand Warrants
Residential Electrical Systems (3+0)
Provides basic electrical theory and technical skills for installation and service of electrical equipment commonly found in the home.

TTCH 113 3 Credits As Demand Warrants
Basic Plumbing (3+0)
Introduction to methods and materials used in household plumbing. Topics includes pipe fittings and valves, pipe hangers and brackets, copper and plastic pipe fitting and plumbing fixtures.

TTCH 117A 1 Credit As Demand Warrants
Four-Cycle Engine Repair (1+0)
Covers four-cycle engine theory and principles of operation. Classroom activities include step-by-step disassembly, inspection and assembly of a four-cycle engine.

TTCH 117B 1 Credit As Demand Warrants
Two-Cycle Engine Repair
Covers two-cycle engine theory and principles of operation. Classroom activities include step-by-step disassembly, inspection and assembly as well as familarization with tools used in small engine repair.

TTCH 120 4 Credits As Demand Warrants
Refrigeration and Air Conditioning (4+0)
Introduces fundamentals of refrigeration and air conditioning theory for preparation of futher study. Topics include compressors, condensers, evaporators, metering devices and related components. Assumes no previous knowledge on part of student.

TTCH 130 3 Credits As Demand Warrants
Blueprint and Schematic Reading (3+0)
Basic blueprint and schematic reading skills used by building maintenance personnel. Introduction to machine drawings, building drawings, hydraulic and pneumatic drawings, electrical schematics and symbols, air conditioning and refrigeration drawings, welding and joining symbols.

TTCH 131 3 Credits As Demand Warrants
Maintenance Mathematics (3+0)
Practical application of mathematics as applied to industry, including arithmetic review, ratios and proportion, powers and roots, algebra, geometry and trigonometry. Mathematical appplications of basic physics with reference to units of measurement, use of precision measuring tools, measurement of forces, temperature, fluids and electricity.

TTCH 132 3 Credits As Demand Warrants
Building Maintenance Materials (3+0)
Discusses the basic properties, processes and uses of metals and nonmetals in tools, machines and building materials. Practical application of these materials to building maintenance situations will be emphasized.

TTCH 133 3 Credits As Demand Warrants
Basic Hand and Power Tools (3+))
Includes proper nomenclature, uses, care and maintenance of hand and power tools. Familiarity and skill development with these tools through construction of shop projects.

TTCH 134 1 Credit As Demand Warrants
Maintenance Safety (1+0)
Introduction to industrial safety Including the following: recognizing safety hazards; working safely; handling materials safely; using machinery safely; personal protective equipment; electrical safety; fire protection and government safety regulations.

TTCH 135 1 Credit As Demand Warrants
Basic Maintenance Troubleshooting (1+0)
Basic troubleshooting procedures used by building maintenance personnel in the repair of plant equipment and systems. Systematic approaches to troubleshooting, scheduled and unscheduled maintenance.

TTCH 136 3 Credits As Demand Warrants
Basic Shielded Metal-Arc Welding (3+0)
Introduction to welding in preparation of further study. Topics included are welding safety, electrical welding equipment, electrode identification and selection. Welding practice on mild steel in various welder positions. Assumes no previous knowledge on part of student.

TTCH 146 2 Credits As Demand Warrants
Furnace Repair (2+0)
Introduction to theory of operation, maintenance, repair of oil burning furnaces, both forced air and radiant. Course is designed to familiarize the homeowner with routine maintenance and upkeep of a furnace and trouble shooting procedures for emergency servicing.

TTCH 147 1 Credit As Demand Warrants
Burner Maintenance and Repair (1+2)
Students will learn to troubleshoot 10 common problems, read manuals, change parts, set electrodes, change nozzles, understand controls and order replacement parts.

TTCH 214 3 Credits As Demand Warrants
Heating Systems Design (3+0)
Comprehensive instruction in installation and design of heating systems. Topics include installation procedures of current systems, heat loss calculation, heat distribution through hydronic and air systems, and boiler and furnace sizing. Major emphasis is placed upon systems approach to heating system design.

TTCH 099, 199, 299 1-3 Credits As Demand Warrants
Practicum
Allows the student to work on and develop the skills learned in prior courses. Designed to meet the needs of individual students.

Welding and Materials Technology

WMT 101 3 Credits As Demand Warrants
Introduction to Welding (2+2)
Introduction and orientation to the processes and procedures involved in the welding field. Course presented in a "hands-on" fashion.

WMT 102 3 Credits As Demand Warrants
Intermediate Welding (2+2)
Continuation of WMT 101 (Prerequisite: WMT 101.)

WMT 103 3 Credits As Demand Warrants
Welding I (3+0)
Entry-level course in basic oxy-acetylene, arc welding, flame cutting, brazing, and braze welding principles and practices. Materials fee: $200.00.

WMT 105 3 Credits As Demand Warrants
Welding II (3+0)
Covers arc welding techniques and basic MIG and TIG welding. (Prerequisite: WMT 103 or permission of instructor.) Materials fee: $200.00.

WMT 110 1-3 Credits As Demand Warrants
Oxy-Acetylene Welding (OAW)
Up to three credits will be awarded toward the program for successful completion of any of the four sections; 110A-Certif OAW (1G);110B-Certif OAW (2G);110C-Certif OAW (3G);110D-Certif OAW (4G). Courses are presented in competency based manner.

WMT 115 1 Credit As Demand Warrants
Bronze Gas Welding (OAW Bronze) (1+0)
One credit will be granted for successful completion of the certification test. WMT 115A-Certif OAW (1G). Course presented in competency based manner.

WMT 130 1-3 Credits As Demand Warrants
Shielded Metal Arc Wleding (SMAW)
All positions will be emphasized for multiple pass fillet welds. Up to three credits will be awarded toward the program for successful completion of any of the four sections; 130A-Certif SMAW (1F); 130B-Certif SMAW (2F); 130C-Certif SMAW (3F); 130D-Certif SMAW (4F). Course presented in competency based manner.

WMT 150 1-3 Credits As Demand Warrants
Gas Tungsten Arc Welding (GTAW)
Use of tungsten and argon gas to do aluminum and stainless steel gas welding. (Formerly call Heliarc.) Up to three credits will be awarded toward the program for successful completion of any of the four sections; 150A-Certif GMAW Alum (1F);150B-Certif GMAW Alum (2F);150C-Certif GMAW Alum (3F);150D-Certif GMAW ALum (4F). Course presented in competency based manner.

WMT 160 1-3 Credits As Demand Warrants
Gas Metal Arc Weld Alum (GMAW)
Course designed to prepare student to work on Microwire processes. Up to three credits will be awarded toward the program for successful completion of any of the four section; 160A-Certif GMAW M.Steel (1F); 160B-Certif GMAW M. Steel (2F); 160C-Certif GMAW M. Steel (3F); 160D-Certif GMAW M. Steel (4F). Course presented in competency based manner.

WMT 241 3 Credits As Demand Warrants
Gas, MIG and TIG Welding (3+0)
Course covers gas shield welding with three common methods used in industry. Emphasis on metal specifications, cap joints, butt joints, tee joints and tube welding on steel, aluminum and stainless. Materials fee: $250.00. (Prerequisite: WMT 103 and 105.)

WMT 261 3 Credits As Demand Warrants
Aviation Welding (2+2)
Tungsten inert gas and oxyacetyene will be used to weld Moly steel aircraft structural parts. Basic aircraft joints and sheet metal joints will be welded. Recommended as a review for licensed Aircraft and Power mechanics as well as those contemplating an A & P license.

Wildlife

WLF 101 1 Credit Spring
Survey of Wildlife Science (1+0)
Survey of the history and nature of wildlife work. Lectures, supplemented by guest presentations, will introduce major aspects of wildlife biology and management as well as the research of local wildlife biologists and the programs of management agencies. (Prerequisite: Completion of a course emphasizing the biology of non-human organisms.)

WLF 201 2 Credits Spring
Wildlife Management Principles (1+3)
Application of ecological principles to the study and management of wildlife populations and habitats. Laboratory work in information retrieval from biological and resource management literature, examples in the use of computers and quantitative methods in wildlife work. Some field trips may be included. (Prerequisites: BIOL 271, familiarity with computer usage desirable.)

WLF 303 3 Credits Fall
Wildlife Management Techniques (2+3)
Study of procedures used by wildlife biologists and managers to collect, analyze, and disseminate information. A brief discussion of the usefulness of a technique will precede its description or application. Topics covered include: using the wildlife literature and scientific writing; behavioral sampling; nomenclature, identification, and sexing and aging of wildlife; census methods; habitat evaluation and manipulation; biotelemetry; home range; food habits and modeling; and necropsy procedures, animal condition, and wildlife diseases. A term paper is required. Laboratory fee: $10.00. (Prerequisites: WLF 201 or equivalent, BIOL 271.)

WLF 304 1-3 Credits Fall and Spring
Wildlife Internships
Programs designed to provide undergraduate students with practical experience in wildlife management in public or private agencies. Projects are approved by faculty member and supervised by professional agency staff. Not substitutable for courses required for major. (Prerequisites: Permission of instructor.)

WLF 305 3 Credits Alternate Fall
Concepts of Animal/Wildlife Diseases (2+3)
Basic concenpts of parasitic, infectious, environmental, and nutritional diseases. Specific study of Alaskan wildlife diseases. Basic sterile technique, treatment and chemical immobilization. Laboratory fee: $10.00. (Prerequisites: BIOL 105, 106 or equivalent and permission of instructor. Next offered: 1990-91.)

WLF 360 3 Credits Fall
Nutrition and Physiological Ecology of Wildlife (3+0)
Concepts and techniques of nutrition and physiological ecology used by wildlife managers to understand relationships between wild animals and habitats they occupy. Includes techniques for constructing energy and nutrient budgets of wild animals and applications of these budgets to population level processes and habitat management. (Prerequisites: BIOL 210, 271, WLF 201.)

WLF 410 3 Credits Spring
Wildlife Populations and Their Management (2+3)
The characteristics and ecology of wildlife populations and the knowledge necessary for their wise management. Measures of abundance, dispersal, fecundity and mortality, population modeling, competition and predation, and the management of rare species and their habitats. Laboratory fee: $10.00. (Prerequisites: BIOL 271, STAT 301, WLF 303.)

WLF 417 2 Credits Alternate Spring
Wildlife Management: Forest and Tundra (2+0)
Description of tundra and forest ecosystems including major groups of birds and mammals. Biological, economic, and political factors important in the conservation of major species. (Prerequisites: BIOL 425 and BIOL 426 or permission of the instructor. Next offered: 1989-90.)

WLF 419 3 Credits Alternate Fall
Waterfowl and Wetlands Ecology and Management (3+0)
Distribution and abundance of North American waterfowl. Ecology of waterfowl, shorebirds and furbearers and their associated wetland habitats. Management of populations including harvest and manipulation of habitats. Field trips to important wetlands in Alaska. (Prerequisite: BIOL 271, 426 or permission of the instructor. Next offered: 1989-90.)

WLF 420 3 Credits Spring
Wildlife Policy and Administration (3+0)
Study of laws and agencies shaping wildlife management in North America. History and current status of major policy issues. Organization of and funding sources for state and federal programs in wildlife conservation. (Prerequisite: A 3 credit course in wildlife management principles or permission of instructor.)

WLF 611 Credits Arr. As Demand Warrants
WLF 612 Credits Arr.
Wildlife Field Trip

WLF 614 2 Credits Alternate Spring
Grazing Ecology (2+0)
(Same as BIOL 614)

WLF 615 2 Credits Alternate Fall
Advanced Topics in Wildlife Management (2+0)

WLF 621 3 Credits Alternate Spring
Vertebrate Population Dynamics (2+3)

WLF 692 1 Credit Fall and Spring
Graduate Seminar (0+0+1)

The addition to the Duckering Building created needed space for UAF's engineering programs.

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Fairbanks 99701 ..... business 452-4755

Emeriti

Bedford, Jimmy, Professor of Journalism, Emeritus. University of Missouri '50, A.M.; '51, B.J.; '52, M.A. (1965-1981)

Behlke, Charles M., Dean, School of Engineering, Professor of Civil Engineering, Emeritus. Washington State University '48 B.S.; '50, M.S. Stanford University '57, Ph.D.; P.E. (1950-1954, 1965-1980)

Beistline, Earl H., Dean, School of Mineral Industry, Professor of Mining, Emeritus. University of Alaska '39, B.Min. Engr.; '47, E.M.; '69, LL.D. (Hon.); P.E. (1946-1982)

Belon, Albert E., Professor of Physics, Emeritus. University of Alaska '52, B.S.; University of California, Los Angeles '54, M.A.; University of Alaska '84, D. Sc. (Hon.) (1956-1983)

Benson, Carl S., Professor of Geophysics and Geology, Emeritus. University of Minnesota '50, B.A.; '56, M.S.; California Institute of Technology '60, Ph.D. (1960-1987)

Bernet, John William, Professor of English, Emeritus. State University of Iowa '51, B.A.; University of North Dakota '57, M.A.; Stanford University '69, M.A.; '69, Ph.D. (1959-1961; 1970-1988)

Brundage, Arthur L., Professor of Animal Science, Emeritus. Cornell University '50, B.S.; University of Minnesota '52, M.S.; '55, Ph.D. (1968-1985)

Burdick, John L., Professor of Civil Engineering, Emeritus. Rensselaer Polytechnic Institute '47, B.S.C.E.; Massachusetts Institute of Technology '48, S.M.; P.E.; L.S. (1960-1983)

Carlson, Axel R., Professor of Extension, Emeritus. Michigan State University '53, B.S.; Pennsylvania State University '66, M.S. (1965-1980)

Cashen, William R., Professor of Mathematics and Marshal of the University, Emeritus. University of Alaska '37, B.S.; University of Washington '48, M.A. (1942-1974) Deceased

Clark, Bettie H., Head, Alumni Services and Career Planning and Placement, Emeritus, University of Alaska '35, B.S. (1962-1972)

Clark, Vena A., Associate Professor of Home Economics, Emeritus. Cotner College '25, A.B.; Iowa State University '33, M.S. (1953-1967)

Clutts, Joan B., Professor of Education, Emeritus. Colorado College '51, B.A.; University of Missouri '85, M.Ed.; '69, Ed.D. (1961-1984)

Cook, Donald, Professor of Mineral Beneficiation, Emeritus. University of Alaska '47, B.S.; '52, E.M.; Pennsylvania State University '58, M.S.; '60, Ph.D.; P.E. (1957-1979)

Cutler, Howard A., Chancellor and Regents' Professor of Economics, Emeritus. State University of Iowa '40, B.A.; '41, M.A.; Columbia University '51, Ph.D. (1962-1966, 1975-1983)

Dafoe, Don M., Executive Vice President, Emeritus. Valley City State College '37, B.A.; University of Idaho '48, M.S.; Stanford University '61, Ed.D. (1966-1976)

Darnell, Frank, Professor of Education, Emeritus. Colorado State University '51, B.S.; University of Alaska '62, M.Ed.; Wayne State University '70, Ed.D. (1966-1978)

Davis, Charles W., Professor of Music, Emeritus. State University of Iowa '37, B.A.; '48, M.A. (1963-1979)

Davis, T. Neil, Professor of Geophysics, Emeritus. University of Alaska '55, B.S.; California Institute of Technology '57, M.S.; University of Alaska '61, Ph.D. (1953-1982)

Dinkel, Don H., Professor of Plant Physiology, Emeritus. University of Minnesota '54, B.S.; '60, Ph.D. (1960-1966, 1968-1983)

Deehr, Charles Sterling, Professor of Physics, Emeritus. Reed College '58, B.A.; University of Alaska '61, M.S.; '68, Ph.D. (1958-1988)

Elsner, Robert, Professor of Marine Science, Emeritus. New York University '50, B.A.; University of Washington '55, M.S.; '59, Ph.D. (1973-1988)

Epps, Alan C., Professor of Natural Resources, Emeritus. Montana State University '66, B.S.; '69, M.S. (1969-1988)

Fink, Milton A., Professor of Accounting, Emeritus. University of Nebraska '58, B.S.; University of Denver '66, M.S.B.A.; Colorado '66, C.P.A., Alaska '69, C.P.A. (1968-1988)

Fohn-Hansen, Lydia, 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)

Forbes, Robert B., Professor of Geology, Emeritus. University of Washington '50, B.S.; '59, Ph.D. (1959-1977)

Gilmore, John C., Professor of Physical Education, Emeritus. Stanford University '54, B.A.; '58, M.A.; '67. Ed.D. (1968-1984)

Gordon, Bruce R., Professor of French and Spanish, Emeritus. Brown University '37, A.B.; New York State College for Teachers '42, M.A.; Syracuse University '50, Ph.D. (1963-1977)

Griese, Arnold, Professor of Education, Emeritus. Georgetown University '48, B.A.; University of Miami '57, M.Ed.; University of Arizona '60, Ph.D. (1960-1980)

Harbo, Samuel J., Professor of Wildlife Management and Biometrics, Emeritus. University of Nebraska '51, B.S.; University of Alaska '58, M.S.; North Carolina State University, Raleigh '72, Ph.D.

Head, Thomas J., Professor of Mathematics and Computer Science, Emeritus. University of Oklahoma '54, B.S.; '55, M.A.; University of Kansas '62, Ph.D. (1965-1988)

Hessler, Victor P., Professor of Geophysics, Emeritus. Oregon State University '26, B.S.; Iowa State University '27, M.S.; '34, Ph.D. (1955-1968)

Hollerbach, Wolf, Professor of French and Spanish, Emeritus. Universite de Rennes '61, Doctorat d'Universite, University of Bonn '62, Wissenschaftliches Staatsexamen. (1965-1988)

Hood, Donald W., Professor of Marine Science, Emeritus. Pennsylvania State University '40, B.S.; Oklahoma State University '42, M.S.; Texas A&M University '50, Ph.D. (1965-1978)

Hunsucker, Robert, Professor of Electrical Engineering, Emeritus and Professor of Physics, Emeritus. Oregon State University '54, B.S.; '58, M.S.; University of Colorado '69, Ph.D. (1971-1987)

Hunt, William, Professor of History, Emeritus. Seattle University '51, B.S.S.; University of Washington '58, J.D.; '66, M.A.; '67, Ph.D. (1967-1979)

Irving, Laurence, Professor of Zoophysiology, Emeritus. Bowdoin College '16, A.B.; '59, D.Sc. (Hon.); Harvard University '17, A.M.; Stanford University '24, Ph.D.; University of Oslo '56, M.D. (Hon.); University of Alaska '68, D.Sc. (Hon.) (1962-1975) Deceased

Jones, Laura, Director of Admissions and Registrar, Emeritus. University of Denver '41, B.A. (1956-1971) Deceased.

Keim, Charles J., Professor of Journalism and English, Emeritus. University of Washington '48, B.A.; '50, M.A. (1954-1977)

Keller, William K., 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) Deceased

Klebesadel, Leslie J., Professor of Agronomy, Emeritus. University of Wisconsin '55, B.S.; '56, M.S.; '58, Ph.D. (1957-1988)

Leekley, James R., Senior Scientist in Charge, Petersburg Fur Farm, Emeritus. Oregon State University '38, B.S. (1941-1972)

Logsdon, Charles E., Professor of Plant Pathology, Emeritus. University of Kansas City '42, B.A.; University of Minnesota '54, Ph.D. (1953-1978)

Mark Anthony, Leo, Professor of Mining Extension, Emeritus. University of Alaska '52, B.S. (1952-1987)

Mather, Keith B., Director of the Geophysical Institute, Emeritus and Professor of Physics, Emeritus. Adelaide University '42, B.Sc.; '44, M.Sc.; University of Alaska '68 (Hon.) D.Sc.

Matthews, James W., Professor of Extension, Emeritus. North Dakota State University '52, B.S.; University of Wisconsin '61, M.S.; '70, Ph.D. (1957-1987)

Mendenhall, William W., Professor of Civil Engineering, Emeritus. Cornell University '49,B.C.E.; '60, M.S.; P.E.; L.S. (1955-1987)

Merritt, Robert P., Professor of Electrical Engineering, Emeritus. Oregon State College '49, B.S.; Stanford University '68, M.S.; P.E. (1955-1966; 1968-1987)

Milan, Frederick A., Professor of Human Ecology and Anthropology, Emeritus. University of Alaska '52, B.A.; University of Wisconsin '59, M.S.; 62, Ph.D. (1971-1987)

Miller, Orlando W., Professor of History, Emeritus. Muhlenberg College '47, B.A.; Columbia University '48, M.A.; '66, Ph.D. (1957-1978)

Mitchell, William W., Professor of Agronomy, Emeritus. University of Montana '57, B.A.; '58, M.A.; Iowa State University '62, Ph.D. (1963-1988)

Moore, Terris, President Emeritus and 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. 1953-1972)

Morrison, Peter R., Professor of Zoophysiology, Emeritus. Swarthmore College '40, A.B.; Harvard University '47, Ph.D. (1963-1974)

Morrow, James E., Professor of Zoology, Emeritus. Middlebury College '40, A.B.; '42, M.S.; Yale University '44, M.S.; '49, Ph.D. (1960-1977)

Neiland, Bonita J., Professor of Land Resources and Botany, Emeritus. University of Oregon '49, B.S.; Oregon State College '51, M.A.; University of Wisconsin '54, Ph.D. (1961-1988)

Novatney, Dorothy H., Professor of English, Emeritus. Pomona College '28, B.A.; Claremont College '30, M.A.; Teachers College '38, Ed.D. (1943-1945, 1956-1963)

Ohtake, Takeshi, Professor of Physics, Emeritus. Tohoku University '52, B.Sc.; '61, D.Sc. (1964-1988)

Orvik, James M., Professor of Psychology, Emeritus. San Diego State College '63, B.A.; '65, M.S.; Colorado University '70, Ph.D. (1969-1988)

Parthasarathy, Raghavaiyengar, Professor of Physics, Emeritus. Annamalai University '50, B.S.; '52, M.S. (1958-1980)

Rae, Kenneth M., Vice President for Research and Professor of Marine Science, Emeritus. University College, London '35, B.Sc.; '58, Ph.D. (1961-1976)

Renner, Louis L., Professor of German, Emeritus. Gonzaga University '50, A.B.; '51, M.A.; University of Santa Clara '58, M.S.T.; University of Munich '65, Ph.D. (1965-1980)

Restad, Sigmund H., Assistant Director, Emeritus, Alaska Agricultural and Forestry Experiment Station. University of Minnesota '53, B.S.; '54, M.S. (1958-1962; 1968-1987)

Rice, Elbert F., Professor of Civil Engineering, Emeritus. University of Idaho '48, B.S.; Oregon State College '49, M.S.; '55, Ph.D., P.E. (1952-1982) Deceased

Roberts, Thomas D., Professor of Electrical Engineering, Emeritus and Director of the Institute of Northern Engineering, Emeritus. University of Alabama '59, B.S.; Oregon State University '65, Ph.D., P.E. (1966-1987)

Rogers, George W., Professor of Economics, Emeritus. University of California, Berkeley '42, B.A.; '43, M.A.; Harvard University '50, Ph.D. (1960-1983)

Romick, Gerald J., Professor of Geophysics, Emeritus. University of Alaska '52, B.S.; University of California, Los Angeles '54, M.S.; University of Alaska '64, Ph.D. (1951-1984)

Rowinski, L. J., Director of University of Alaska Museum, Emeritus. Cornell University '51, B.S.; University of Alaska '58, M.S. (1957-1980)

Ryberg, H. Theodore, Director of Libraries, Emeritus. Gettysburg College '55, A.B.; Western Reserve University '57, M.S. (1962-1980)

Salisbury, Lee H., Professor of Speech and Drama, Emeritus. New York University '49, B.S.; Columbia University '50, M.A. (1952-1988)

Sargent, Charles, Dean, College of Mathematics, Physical Sciences and Engineering, Emeritus. University of Idaho '48, B.S.C.E.; Stanford University '58, M.S. (Professor 1953-1961, Dean 1961-1967)

Senungetuk, Ronald W., Professor of Art, Emeritus. Rochester Institute of Technology '60, A.A.S. and B.F.A.; Statens Handvaerks og Kunstindustriskole, Oslo, Norway '61, Diploma. (1961-1987)

Sheridan, J.Roger, Professor of Physics, Emeritus. Reed College '55, B.A.; University of Washington '64, Ph.D. (1964-1987)

Sivjee, Abas, Professor of Physics, Emeritus. University of London '63, B.S.; Johns Hopkins University '70, Ph.D. (1972-1988)

Slotnick, Herman E., Professor of History, Emeritus. University of Idaho '39, B.A.; University of Washington '58, Ph.D. (1955-1978)

Smith, R. London, Professor of Political Science, Emeritus. College of St. Joseph '54, B.A.; University of Oklahoma '55, M.A.; American University '64, Ph.D. (1965-1984)

Stetson, Marguerite, Professor of Extension, Emeritus. Oregon State University '57, B.S.; University of Alaska '72, M.A.T. (1974-1987)

Sunnell, Agnes S., Associate Professor of Extension, Emeritus. University of Washington '31, B.S.; Washington State University '44, M.S. (1960-1970)

Swartz, L. Gerard, Professor of Biological Sciences, Emeritus. University of Illinois '53, B.S.; '54, M.S.; '58, Ph.D. (1958-1988)

Taylor, Roscoe L., Professor of Agronomy, Emeritus. South Dakota State University '48, B.S.; Iowa State University '51, M.S. (1951-1988)

Tiedemann, James B., Professor of Mechanical Engineering Emeritus. University of Wisconsin '45, B.S.; '49, M.S.; '55, Ph.D.; P.E.

Tilly, Lola Cremeans, Professor of Home Economics, Emeritus. University of Illinois '20, A.B.; '21 M.S.; University of Alaska '63, D.Hum. (1929-1937, 1942-1963)

Van Veldhuizen, Philip, Professor of Mathematics, Emeritus. Central College '52, B.A.; State University of Iow '60, M.S. (1963-1988)

Wells, Minnie, Professor of English, Emeritus. University of Missouri '25, B.S.; New York University '38, Ph.D. (1945-1971)

Wilson, Charles R., Professor of Physics, Emeritus. Case Institute of Technology '51, B.S.; University of New Mexico '56, M.S.; University of Alaska '63, Ph.D.

Wilson, William S., Head, Department of General Science, and Professor of Chemistry and General Science, Emeritus. Brown University '31, B.Sc.; '34, M.Sc.; Yale University '36, Ph.D. (1947-1972) Deceased

Wood, William R., President Emeritus. Illinois College '27, A.B.; '60, LL.D. (Hon.); University of Iowa '36, M.A.; '39, Ph.D. (1960-1973)

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Faculty Senate, David Smith, President

Faculty and Staff

The date following each name designates the time of original appointment to the University faculty or staff. (Dates of resignations and reappointments are not indicated.)

A second date in parentheses follows each member's present rank and indicates the beginning of service in that rank.

The abbreviation that follows this second date indicates the University of AlaskaFairbanks unit in which the employee works.

The abbreviations are:

AFES	Agricultural and Forestry Experiment Station
ATHREC	Athletics and Recreation
C&I	Conferences and Institutes
CC	Chukchi Campus
CLA	College of Liberal Arts
CNS	College of Natural Sciences
CES	Cooperative Extension Service
FITC	Fishery Industrial Technology Center
GI	Geophysical Institute
IAB	Institute of Arctic Biology
IMS	Institute of Marine Science
INE	Institute of Northern Engineering
JCFOS	Juneau Center for Fisheries and Ocean Sciences
KUC	Kuskokwim Campus
LIB	Elmer Rasmuson Library
MAP	Marine Advisory Program
NWC	Northwest Campus
RC	Rural College
RCTR	Rural Centers
SALRM	School of Agriculture and Land Resources Management
SCCE	School of Career and Continuing Education
SENG	School of Engineering
SFOS	School of Fisheries and Ocean Sciences
SG	Alaska Sea Grant College Program
SME	School of Mineral Engineering
SOM	School of Management
STUAFF	Student Affairs
UAM	University of Alaska Museum
VCA	Vice Chancellor for Administration
VCAA	Vice Chancellor for Academic Affairs
VCR	Vice Chancellor for Research

Abrahams, Sherry Lynn — 1964 — Associate Professor of Library Science (1975), LIB. Bowling Green State University '58, B.A.; University of Illinois '59, M.S.L.S.

Adams, John L. — 1982 — Music Director, KUAC-FM (1985), CLA. California Institute of the Arts '73, B.F.A.

Adu-Asamoah, Richard — 1987 — Visiting Assistant Professor of Economics (1987), SOM. University of Science and Technology, Ghana '79, B.S.; Cornell University '83, M.S.; Oregon State University '87, Ph.D.

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Walworth, James — 1989 — Assistant Professor of Soil Fertility (1989), SALRM. University of Wisconsin '76, B.S.; '80, M.S.; University of Georgia '85, Ph.D.

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White, Robert Gordon — 1970 — Professor of Zoophysiology and Nutrition (1981), CNS, IAB. University of Melbourne '62, B.Agr.S.; University of New England '68, M.Rur.S.; '73, Ph.D.

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Workman, William G. — 1973 — Associate Professor of Economics (1979), SALRM. University of Wyoming '69, B.S.; Utah State University '72, M.A. '73, Ph.D.

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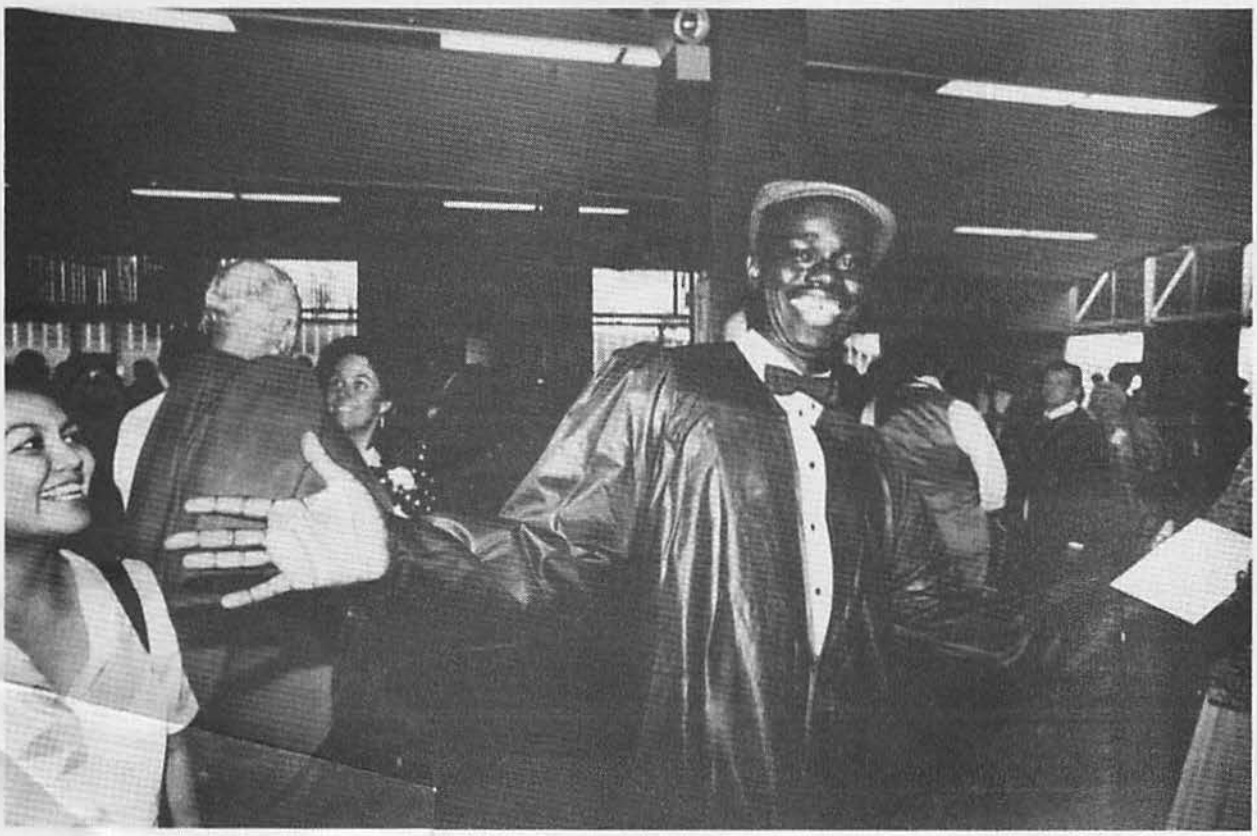

Darryl Lewis is happy to be a member of the UAF class of 1988.

Credits

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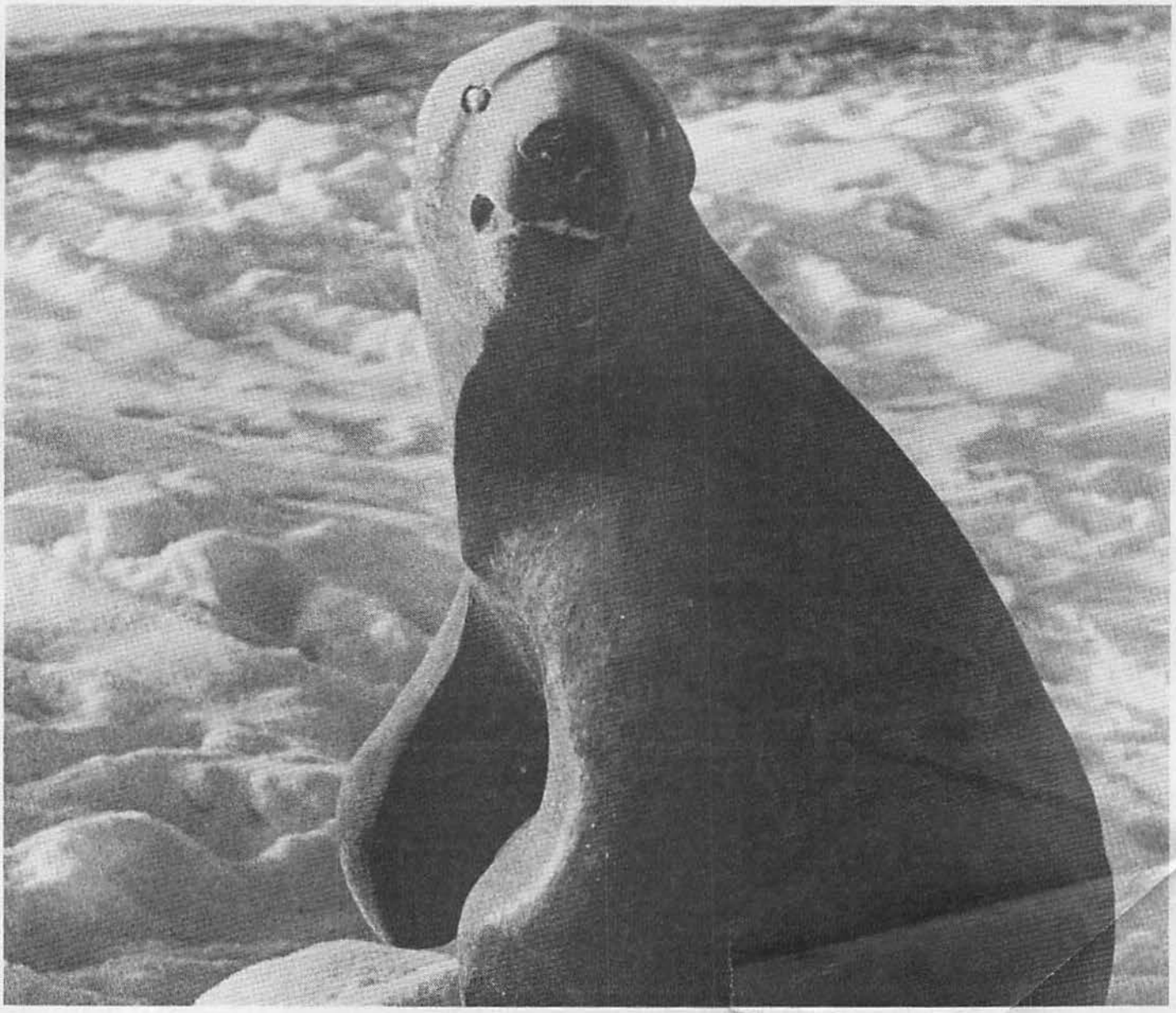
Front cover:

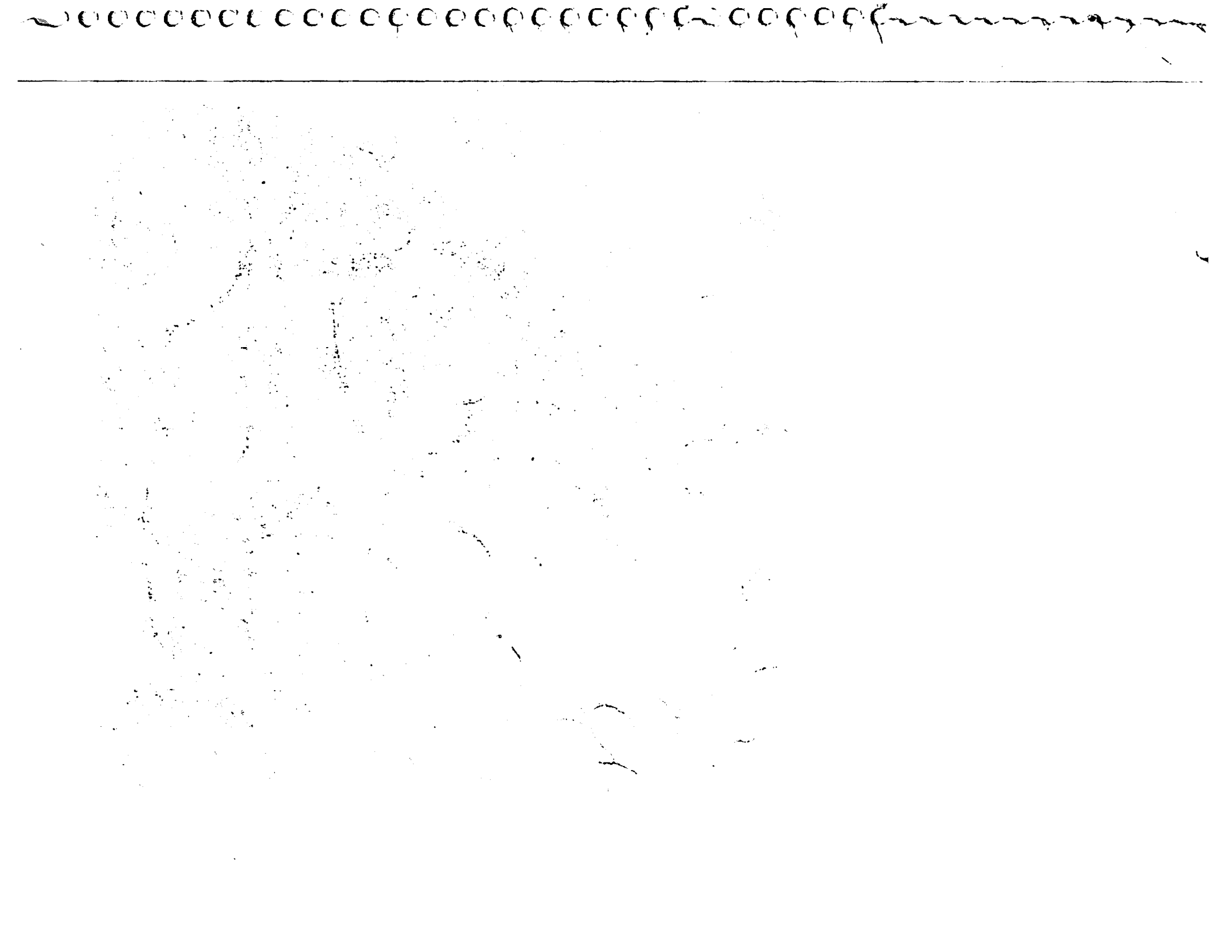
The brilliant fall colors in Alaska are a breathtaking sight. This photo was taken by Samuel Winch in Denali National Park, which is located about 100 miles from Fairbanks.

Back cover:

The University of Alaska Fairbanks main campus encompasses more than 2,200 acres.



Nanook, a sculpture by Melvin Olanna, welcomes visitors to the Patty Center on the UAF main campus.



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