University of Alaska Fairbanks



1991-92

UNDERGRADUATE

CATALOG

Fairbanks Campus Academic Calendar

Fall Semester	1991	1992
Labor Day	Mon., Sept. 2	Mon., Sept. 7
Early Orientation for New Students	Sun.-Wed., Sept. 1-4	Sun.-Wed., Aug. 30-Sept. 2
Registration materials and advisers available	Tues.-Wed., Sept. 3-4	Tues.-Wed., Sept. 1-2
Registration: course selection	Tues.-Wed., Sept. 3-4	Tues.-Wed., Sept. 1-2
Registration: fee payment	Thurs.-Wed., Sept. 5-6, 9-11	Thurs.-Wed., Sept. 3-4, 7-9
First day of instruction	Thurs., Sept. 5	Thurs., Sept. 3
Last day of late registration	Wed., Sept. 11	Thurs., Sept. 10
Last day to apply for fall graduation	Tues., Oct. 15	Thurs., Oct. 15
Mid-term grades for freshmen due	Oct. 17-30	Oct. 16-29
Last day for student-initiated withdrawals	Wed., Nov. 6	Thurs., Nov. 5
Thanksgiving holidays	Thurs.-Sun., Nov. 28-Dec. 1	Thurs.-Sun., Nov. 26-29
Last day of instruction	Fri., Dec. 13	Mon., Dec. 14
Study day	None	Tues., Dec. 15
Final examinations	Mon.-Thurs., Dec. 16-19	Wed.-Sat., Dec. 16-19
Grades due to Admissions and Records	3 p.m., Mon., Dec. 23	3 p.m., Wed., Dec. 23
Spring Semester	**1992**	**1993**
Early Orientation for New Students	Mon.-Tues., Jan. 13-14	Mon.-Tues., Jan. 11-12
Registration materials and advisers available	Mon., Jan. 13	Mon., Jan. 11
Registration: course selection	Tues.-Wed., Jan. 14-15	Tues.-Wed., Jan. 12-13
Registration: fee payment	Thurs.-Wed., Jan. 16-22	Thurs.-Wed., Jan. 14-20
First day of instruction	Thurs., Jan. 16	Thurs., Jan. 14
Last day of late registration	Wed., Jan. 22	Wed., Jan. 20
Last day to apply for spring graduation	Fri., Feb. 14	Mon., Feb. 15
Mid-term grades for freshmen due	Feb. 20-Mar. 4	Feb. 20-Mar. 36
Spring recess	Mon.-Sun., Mar. 16-22	Mon.-Sun., Mar. 8-14
Last day for student-initiated withdrawal	Wed., Mar. 25	Wed., Mar. 24
All Campus Day (no classes)	Fri., Apr. 24	Fri., Apr. 23
Last day of instruction	Fri., May 1	Fri., Apr. 30
Final examinations	Mon.-Thurs., May 4-7	Mon.-Thurs., May 3-6
Commencement	Sun., May 10	Sun., May 12
Grades due to Admissions and Records	3 p.m., Wed., May 13	3 p.m., Wed., May 12

Academic calendars for UAF's branch campuses can be found on Pages 8-9.

UNIVERSITY OF ALASKA FAIRBANKS

1991-92

UNDERGRADUATE

CATALOG



Accreditation

- Commission on Colleges of the Northwest Association of Schools and Colleges

Specialized Accreditations

- Accreditation Board for Engineering and Technology
- Accrediting Council on Education in Journalism and Mass Communication
- Alaska State Board of Education through National Association of State Directors of Teacher Education and Certification
- American Assembly of Collegiate Schools of Business
- American Association of Museums
- American Chemical Society
- Council on Social Work Education
- National Association of Schools of Music
- National Council for Accreditation of Teacher Education

About this Catalog

This catalog offers you a complete guide to studying at the University of Alaska Fairbanks. It includes information on admission and graduation requirements, as well as program and course listings for certificate, associate and bachelor's degree students. You should refer to this catalog for clarification on what's required of you as a UAF student, and for specific information about what's offered on campus. A graduate catalog is also available; to request a copy, contact Admissions and Records.

If you're a current or enrolling student, you should also refer to the Class Schedule or the Community Bulletin, which list classes offered, their locations, and when they meet. Schedules and bulletins are available a few weeks before semesters begin. The student handbook, the "A Book," also has information on campus resources, programs and regulations. You can get a copy of the "A Book" from the Student Activities Office in Wood Center.

If you need more information, refer to the directory on Page 2 for a list of UAF offices and phone numbers.

Mike McGowan Fire Science 7916

Questions? Call or write

Information 474-7211

Academic Affairs, 3rd floor Signers' Hall..... 474-7096
Academic Computing, 403 Library 474-7191
Administration, Vice Chancellor for, 310 Signers' Hall..... 474-7340
Admissions and Records, 1st floor Signers' Hall 474-7521
From within Alaska ..... (800) 478-1UAF
Advising Center, 5th floor Gruening 474-6396
Agricultural and Forestry Experiment Station, 309 O'Neill 474-7188
Agriculture and Land Resources Management School of, 309 O'Neill 474-7188
Alaska Native Human Resource Development Program, 707 A Street, Room 205, Anchorage, AK 99501..... 272-9531
Alaska Teacher Placement, M-B-S Complex 474-6644
Alumni Relations, 201 Constitution Hall 474-7081
Arctic Biology, Institute of, 311 Irving..... 474-7648
Arctic Sivunmun Ilisagvik College, Box 69, Barrow, AK 99723..... 852-7337
Associated Students of the University of Alaska Fairbanks, Wood Center..... 474-7355
Athletics and Recreation, Patty Center 474-7205
Bookstore, 2nd floor Constitution Hall..... 474-7348
Bristol Bay Campus, Box 1070, Dillingham, AK 99576..... 852-5483
Business Office, 1st floor Signers' Hall 474-7551
Career and Continuing Education, School of, Downtown Center..... 451-7223
Career Services, 5th floor Gruening..... 474-7596
Chancellor's Office, 3rd floor Signers' Hall..... 474-7112
Chukchi Campus, Box 297, Kotzebue, AK 99752 442-3400
Clubs and Organizations, Wood Center 474-6027
Conferences and Special Events, 117 Eielson..... 474-7800
Cooperative Extension Service, Arctic Health Research Building..... 474-7246
Delta Learning Center, Box 412, Delta Junction, AK 99737 895-4292
Development, Office of, 316 Signers' Hall..... 474-6402
Developmental Studies, Downtown Center..... 451-7223
Distance Education, Center for, 129 Red Building..... 474-5353
Downtown Center, 510 Second Ave., Fairbanks, AK 99701 451-7223
Elderhostel, 118 Red Building 474-5359
Employee Relations, 101 Eielson 474-7349
Engineering, School of, 539 Duckering..... 474-7330
Environmental Health and Safety, 101 Eielson 474-6206
Equal Employment Opportunity, 101 Eielson 474-7919
Faculty Senate, 312 Signers' Hall 474-7056
Financial Aid, 5th floor Gruening..... 474-7256
Fisheries and Ocean Sciences, School of, 217 O'Neill 474-7531
Fishery Industrial Technology Center, 900 Trident Way, Kodiak, AK 99615..... 486-6034
Fort Yukon Center, Box 194, Ft. Yukon, AK 99740 662-2521
Galena Center, Box 181, Galena, AK 99741..... 656-1280
Geophysical Institute, Elvey Building 474-7558
GNOSIS (Library Computing System), 409 Library.... 474-6310
Graduate School, 305 Signers' Hall 474-7464
Health and Counseling, Center for, 2nd floor HS&S Building..... 474-7043
Honors Program, 515 Copper Lane..... 474-6612
Housing Office, M-B-S Complex 474-7247
Hutchison Career Center, 3750 Geist Road, Fairbanks, AK 99701 479-2261
Interior Campus, Red Building..... 474-5439
International Student Adviser, 5th floor Gruening.... 474-7317
Juneau Center for Fisheries and Ocean Sciences, 11120 Glacier Hwy, Juneau, AK 99801 789-4441
KSUA-FM, 303 Constitution Hall..... 474-7054
KUAC-FM and -TV, 208 Fine Arts/Theater 474-7491
Kuskokwim Campus, Box 368, Bethel, AK 99559..... 543-4500
Learning Resource Center, Downtown Center..... 451-7223
Liberal Arts, College of, 405 Gruening..... 474-7231
Library, Rasmuson..... 474-7403
Management, School of, 101 Bunnell..... 474-7461
Marine Advisory Program, 2221 E. Northern Lights Blvd., Suite 220, Anchorage, AK 99508..... 274-9691
Marine Science, Institute of, 217 O'Neill..... 474-7531
McGrath Center, Box 269, McGrath, AK 99627 524-3074
Mineral Engineering, School of, 208 Brooks 474-7366
Mineral Industry Research Laboratory, 210 O'Neill.. 474-7135
Moose Creek Center, 3481 Old Richardson Hwy, North Pole, AK 99702 488-4421
Museum, UA 474-7505
NANA House..... 474-5285
Native Studies, 5th floor Gruening..... 474-7181
Natural Sciences, College of, 465 Duckering 474-7941
Nenana Center, Box 489, Nenana, AK 99760 832-5571
Northern Engineering, Institute of, 539A Duckering..... 474-7775
Northwest Campus, Box 400, Nome, AK 99762..... 443-2201
Patty Center..... 474-5057
Petroleum Development Laboratory, 425 Duckering..... 474-7743
Polar Ice Coring Office, 205 O'Neill..... 474-5585
Pub, Wood Center..... 474-7766
Research, Vice Chancellor for, 306 Signers' Hall 474-7314
Residence Life, 5th floor Gruening..... 474-7317
Rural Alaska Honors Institute, 508 Gruening..... 474-7181
Rural Alaska, College of, 708 Gruening..... 474-7106
Rural Student Services, 5th floor Gruening..... 474-7871
Sea Grant, 138 Irving II 474-7086
Security, HS&S Building..... 474-7721
Small Business Development Center, Downtown Center..... 456-1701
Student Affairs, 5th floor Gruening 474-7317
Student Development and Learning Center, Downtown Center..... 451-7223
Summer Sessions, 2nd floor Signers' Hall 474-7021
Sun Star, Wood Center 474-7540
Testing Services, 514 Gruening..... 474-5277
Tok Center, Box 464, Tok, AK 99780 883-5613
University Relations and Institutional Advancement, 210 Signers' Hall..... 474-7581
Veterans' Information, 1st floor Signers' Hall 474-7521
Wood Center..... 474-7211

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

The area code for UAF offices is (907).

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ROTC cadet Frank Egnaty receives instructions on mapping from Cadet Major Kimberly Keaveny.

The University of Alaska Fairbanks Experience

In 1992, the University of Alaska Fairbanks will commemorate its 75th anniversary. The year will be full of celebrations and the opportunity to consider the arduous task Dr. Charles Bunnell, the institution's first president, began in 1917, when UAF was born. It wasn't called UAF back then; it was the Alaska Agricultural College and School of Mines, created by a special act of the Alaska Territorial Legislature. In 1922 the college opened, with six faculty members and six students. A year later, commencement was held, in honor of the school's first graduate.

As Alaska grew, so did the institution. In 1935, the Territorial Congress decided the school had graduated from a college to something more, and the "University of Alaska" was born.

World War II brought many changes to Alaska. Battles were fought on Alaska soil, the Alaska Highway was built, and the activity spawned the first major migration of people into the state since the gold rush. As people moved to Alaska, so did money, ideas and energy.

In 1946, the Geophysical Institute was established by the U.S. Congress. GI has since earned an international reputation for its studies of the earth and the physical environment at high latitudes. It also operates the Poker Flat Research Range, the only university-owned rocket range in the world.

In 1947, the first summer session was held at the university, symbolizing its growth into a year-round center for knowledge. Ten years later, the university awarded its first Ph.D. All this at the University of Alaska, when Alaska itself had yet to become a state.

Statehood changed the political system for the people who inhabited the vast land mass and waterways known as Alaska. Alaska's constitution was hammered out in what's now Constitution Hall on the UAF campus, and the document was signed, fittingly enough, in stately Signers' Hall, now the home of the UAF administration. Alaska's admission into the Union in 1959 also coincided with major changes at the university itself.

In 1960, the Institute of Marine Science, a unit of the School of Fisheries and Ocean Sciences, was established by the Alaska Legislature. Its offices are on the main UAF campus, with its principal shore facility in Seward. The Seward Marine Center is also the home port of the R/V *Alpha Helix*, a 133-foot research vessel operated by IMS for the National Science Foundation.

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.

As the Fairbanks campus expanded, so did the educational needs of the rest of the state. In 1975, the University of Alaska statewide system was created. Campuses in Anchorage and Juneau were given their own central staff and chancellor, with the statewide administration, and the overall university president, still located in Fairbanks. This period of consolidation coincided with rapid expansion and improvement at the university's main campus in Fairbanks.

The University of Alaska Museum, the most popular man-made visitor attraction in the state, moved into the Otto Geist Building in 1980. More than 100,000 people visit the museum every year, each soaking in just a small portion of the substantial collections organized and displayed at the museum.

In 1981, enrollment topped 5,000 students for the first time. The university also began to emphasize its shared scholarship and global education effort in a series of agreements signed with schools in Japan, Denmark, Canada, the People's Republic of China and the U.S.S.R.

Today, UAF continues to grow, both in size and stature. In addition to the main campus in Fairbanks, UAF has branch campuses in Bethel, Dillingham, Kotzebue and Nome. UAF provides an important resource to rural Alaskans with its education centers in Delta Junction, Fort Yukon, McGrath, Nenana, Tok and Unalaska.

UAF's School of Fisheries and Ocean Sciences combines programs in Juneau and Kodiak with those in Fairbanks, and administers the Marine Advisory Program. The statewide Cooperative Extension Service, with 10 field offices, is also headquartered at UAF. UAF's public broadcasting stations KUAC-FM and -TV were the first public stations in the state. The stations offer an important resource for students who can get hands-on experience at the facilities.

UAF is the state's Land Grant, Sea Grant and Space Grant institution. Its rural college has the primary responsibility for Alaska Native education and study, and UAF remains the only university offering doctoral degrees in Alaska. Three colleges and six schools offer more than 70 fields of study, and a wide variety of technical and vocational programs.

As it celebrates 75 years of growing, UAF will continue to expand the frontiers of knowledge and to play a major role in making Alaska—and the world—a better place to live, to learn and to prosper.

Students

UAF students aren't afraid to be different. The University of Alaska Fairbanks isn't the right school for everyone, but if it is for you, you can take advantage of small classes, first-rate faculty and access to hands-on research—not to mention some of the most breathtaking scenery in the world.

UAF's students come from all 50 states and 25 foreign countries, which can make for an exciting educational environment. A freshman from an Alaska village may share insights with a classmate from Tallahassee or even Tokyo in one year, and take advantage of a UAF exchange program located in Canada, China, Denmark, Korea or Japan the next.

As a UAF student, you won't be bored. There are more than 70 student organizations, and students sponsor the weekly *Sun Star* newspaper, KSUA-FM radio station and scores of special interest groups.

No matter which UAF campus you attend, your credits are fully transferable if you should move to another. This means that you won't have to worry about transfer requests and losing credits if you switch campuses.

UAF's enrollment in the fall of 1990 was 8,380 students; of these, about 3,500 were full-time students. Many of UAF's students are "non-traditional." They study at night or after work, and juggle family responsibilities and class studies. Recognizing their needs, UAF offers a wide variety of night and weekend classes.

Some UAF students live in remote areas of the state, but they still "attend" UAF classes. Through distance delivery of classes, using computers, telephones and the latest technology, students can work toward their degrees without ever leaving home.

In short, being "different" is almost normal at UAF. All in all, UAF students are a diverse group who aren't afraid to be different.

If you're interested in statistics, here are a few about UAF's student body:

57 percent are female, 43 percent are male

69 percent are white, 14 percent are Alaska Native, 6 percent are other minorities, 11 percent are unreported

30 is the average age

90 percent are Alaska residents, 8 percent are from other states, 2 percent are from foreign countries

93 percent are undergraduate students, 7 percent are graduate students

Faculty

UAF's faculty members are among the best in the country, and with a low student/faculty ratio, you'll get lots of personal attention. You'll get more one-on-one attention, in fact, than you would at almost any other public university in the country.

Once you've chosen a major, you'll be assigned a faculty member from your academic department as an adviser. Your adviser can help you choose the classes you take each semester, as well as explain various programs and requirements.

It's been said that "It's not what you know, but who you know." At UAF, students get to know their faculty as friends, and not just as the medium through which an endless stream of facts and figures are delivered for future examination.

Education is an individual process, different for every person—and at UAF, that's what you'll be—a person, and not just a face in the crowd.

Main Campus in Fairbanks

UAF's main campus is located in Fairbanks, which is near the center of the state. On the 2,250-acre campus are two lakes, 35 miles of ski trails and an arboretum.

If you're interested in fitness, the main campus has a major intramural sports program, and the Patty Athletic Center offers facilities for handball/racquetball, swimming, ice hockey, weightlifting and riflery.

Whether you like to play or just watch, UAF sponsors intercollegiate athletics teams in men's and women's basketball, men's and women's cross-country running and skiing, co-ed riflery, men's ice hockey and women's volleyball.

As a UAF student on the main campus, you'll become very familiar with the Wood Center. The center is the focus of many of UAF's out-of-class activities. With a pub, snack bar, ballroom, lounge and games area, Wood Center is a gathering place for the entire university community.

You'll find some of the best facilities in the state at UAF. The Davis Concert Hall and theater are among the finest in the Pacific Northwest; whether you're a performer or a spectator, you'll find something to suit your taste going on almost every weekend during the academic year. The Rasmuson Library is Alaska's largest, and offers traditional ways to access library materials, as well as extensive computer databases to extend the library resources beyond the state. Aside from being among the top 10 visitor attractions in the state, the UA Museum is also a student resource; its vast collections are used for demonstration and comparative studies in classrooms and labs.

The Fairbanks campus is the university's principal research center, with internationally respected research institutes. As an undergraduate, these institutes provide you with an opportunity to see research in action, and perhaps participate in research activities.

UAF's **Downtown Center** in Fairbanks is headquarters for the School of Career and Continuing Education. You can take classes at the center which focus on business, computers, office professions and general developmental education. Computer labs and an office lab are also located at the center.

The **Hutchison Career Center,** located on Geist Road near the main campus, is the home of several vocational/technical programs. With more than 12,000 square feet of shop, classroom and office areas, the space is organized and equipped for skill development. Vocational/technical programs found here include welding, aviation technology, drafting, airframe and powerplant, and diesel/heavy equipment mechanics.

The **Interior Campus** in Fairbanks services 54 towns and village within the Doyon region and the Aleutians/Pribilof Islands, an area of approximately 200,000 square miles. The Interior Campus is the most decentralized of the College of Rural Alaska campuses. Although the director's office and some faculty are located at the University of Alaska Fairbanks main campus, there are Interior Campus centers in Fort Yukon, McGrath, Tok and Unalaska. Courses are offered throughout the region via distance delivery, on site by local or itinerant instructors and by correspondence. The campus offers a range of degree programs, including the Associate of Arts and several

Associate of Applied Science vocationally oriented degrees, as well as skill-building and community interest classes.

Fairbanks Area

Fairbanks, Alaska's second largest city, is situated on the banks of the Chena River in the heart of Alaska. The UAF campus is only four miles from the downtown business district, and the university is easily accessible via the local bus system and a network of bike trails.

Steeped in a history of riverboat captains and gold seekers, today Fairbanks is the dynamic, thriving city that helped build the Trans-Alaska Pipeline. Here striking contemporary buildings sit side-by-side with log cabins left over from the early part of the century. It's a city where the old quietly blends with the new.

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

Literally millions of acres of wilderness surround Fairbanks. Mt. McKinley, the highest mountain in North America, is often visible from many residence hall windows. Whether the sport is canoeing, climbing, running, skiing or fishing, nowhere else compares with Alaska.

Transportation to Fairbanks

Fairbanks is easily accessible by both land and air. Anchorage is only 365 miles away via the Parks Highway or the Alaska Railroad, and Seattle is 2,300 miles away via the Alaska Highway. Major airlines offer several daily flights to Anchorage and Seattle, as well as to many other destinations.

The Alaska Railroad provides all UAF students with a round trip ticket for the price of a one-way ticket. This rate applies to Summer Session students as well as students attending during the regular sessions of the university. To get this special price, students should ask for the special student rate when they purchase their first ticket. When they get to UAF, students need to have their ticket receipts certified by the Office of Admissions and Records when they pay their fees.

Branch Campuses

When the University of Alaska system was restructured in 1987, UAF's instructional, research and public service programs were expanded throughout Alaska. In addition to the main campus in Fairbanks, UAF now has branch campuses in Bethel, Dillingham, Kotzebue and Nome, and administers a number of education center through its Interior Campus. These branches serve rural Alaskans and are central to fulfilling the UAF mission of providing educational opportunities through the state.

No matter which UAF campus you attend, your credits are fully transferable among all UAF campuses. This means that you won't have to worry about transfer requests and losing credits when you switch campuses.

Bristol Bay Campus in Dillingham — The Bristol Bay Campus serves 32 villages in an area of approximately 55,000 square miles, with boundaries that stretch south as far as Ivanof Bay, north to Lake Clark and west to Togiak. The campus is located in Dillingham, the region's hub, 322 air miles from Anchorage and 570 air miles from Fairbanks.

For the past few years, the average enrollment at Bristol Bay Campus has been 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.

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

Chukchi Campus in Kotzebue — The Chukchi Campus is located in Kotzebue on the northwest shore of the Baldwin Peninsula, 30 miles above the Arctic Circle. It serves a region of more than 36,000 square miles, about the size of Indiana. In an academic program which emphasizes the associate of arts degree, Chukchi offers about 28 lower division courses each semester.

Kuskokwim Campus in Bethel — The Kuskokwim Campus is located in what can most accurately be described as a regional center serving an extended community. Bethel, located 80 miles inland on the Kuskokwim River, is a community of approximately 4,000 and serves as the transportation and service center of the region. Housing is available on campus in Sackett Hall, which provides full-service apartments with space for four students in each.

Northwest Campus in Nome-This campus serves not only the residents of Nome, but also the people in the 15 Eskimo villages surrounding Nome. Northwest offers a general program with courses from the first two years of a baccalaureate curriculum, as well as courses leading to the Associate of Arts and Associate of Applied Science degrees. Vocational and general interest courses are also taught.

Branch Campus Academic Calendars

Bristol Bay Campus

1991 Fall Semester

Registration.....Mon.-Fri., Aug. 26-Sept. 6
First day of instruction.....Mon., Sept. 9
Last day to drop classes.....Fri., Sept. 20
Last day to apply for fall graduation.....Tue., Oct. 15
Last day to withdraw.....Fri., Nov. 8
Thanksgiving Holiday.....Thur.-Sun., Nov. 28-Dec. 1
Last day of instruction.....Fri., Dec. 20
Grades due to Admissions Manager from faculty.....Thur., Jan. 2

1992 Spring Semester

Registration.....Mon.-Fri., Jan. 13-17
First day of instruction.....Mon., Jan. 20
Last day to drop classes.....Fri., Jan. 31
Last day to apply for spring graduation.....Fri., Feb. 14
Last day to withdraw.....Fri., Mar. 20
Commencement.....Sat., May 2
Last day of instruction.....Fri., May 15
Grades due to Admissions Manager from faculty.....Fri., May 22

Chukchi Campus

1991 Fall Semester

Registration.....Mon.-Fri., Aug. 26-Sept. 6
First day of classes.....Mon., Sept. 9
Last day of instruction.....Fri., Dec. 20

1992 Spring Semester

Early registration for graduating students.....Mon.-Fri., Dec. 2-13
Registration.....Mon.-Tue., Dec. 16-Jan. 14
First day of classes.....Mon., Jan. 20
Last day of classes.....Fri., May 1

Kuskokwim Campus

1991 Fall Semester

Dormitory opens.....Sat., Aug. 31
New student orientation.....Sun.-Mon., Sept. 1-2
Three-week session begins.....Tues., Sept. 3
Last day of three-week session.....Thurs., Sept. 19
Registration for 12-week session.....Thurs.-Sat., Sept. 19-21
First day of instruction for 12-week session.....Mon., Sept. 23
Last day to add or drop classes.....Fri., Sept. 27
Last day to apply for fall graduation.....Tues., Oct. 15
Last day for student-initiated withdrawals.....Fri., Nov. 15
Thanksgiving holidays.....Thurs.-Sun., Nov. 28-Dec. 1
Last day of instruction.....Thurs., Dec. 19
Final examinations.....Mon.-Thurs., Dec. 16-19
Grades due from faculty.....Mon., Dec. 23

1991

August

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

September

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8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

October

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

November

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

December

S	M	T	W	T	F	S
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8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

1992

January

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

February

S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29

March

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

April

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

May

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

1992 Spring Semester

Dormitory opens..... Tues., Jan. 14
New student orientation ..... Wed., Jan. 15
Registration for 15-week session..... Thurs.-Sat., Jan. 16-18
First day of instruction ..... Mon., Jan. 20
Last day to add or drop classes ..... Fri., Jan. 31
Last day to apply for spring graduation ..... Fri., Feb. 14
Spring recess..... Thurs.-Sun., Mar. 12-15
Last day for student-initiated withdrawals..... Fri., Mar. 20
Last day of instruction..... Wed., Apr. 29
Final examinations ..... Mon.-Wed., Apr. 27-29
Commencement ..... Fri., May 1
Grades due from faculty..... Mon., May 4

Northwest Campus

1991 Fall Semester

Registration..... Mon.-Fri., Aug. 26-Sept. 6; Tues.-Fri., Sept. 3-6
First day of classes ..... Mon., Sept. 9
Last day to add or drop classes ..... Fri., Sept. 20
Last day for tuition refund..... Fri., Sept. 20
Last day for materials refund..... Fri., Sept. 27
Last day to apply for fall graduation ..... Tues., Oct. 15
Last day for student-initiated withdrawals..... Fri., Nov.. 8
Last day of instruction..... Fri., Dec. 20
Grades due from faculty..... Mon., Jan. 13

1992 Spring Semester

Registration..... Mon.-Fri., Jan. 6-10; Mon.-Fri., Jan. 13-17
First day of classes ..... Mon., Jan. 20
Last day to add or drop classes ..... Fri., Jan. 31
Last day for tuition refund..... Fri., Jan. 31
Last day for materials refund..... Fri., Feb. 7
Last day to apply for spring graduation ..... Fri., Feb. 14
Spring break..... Fri., Mar. 13
Last day for student-initiated withdrawals..... Fri., Mar. 20
Last day of instruction..... Fri., May 1
Commencement ..... Thurs., May 7
Grades due from faculty..... Fri., May 15

(Note: Dates are subject to change.)

Multi-campus profile

✪ Main campus, Fairbanks
★ Bristol Bay Campus, Dillingham
★ Chukchi Campus, Kotzebue
★ Interior Campus, Fairbanks
★ Kuskokwim Campus, Bethel
★ Northwest Campus, Nome



1991

August

S	M	T	W	T	F	S
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September

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October

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28	29	30	31			

November

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December

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1992

January

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March

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29	30	31				

April

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May

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24	25	26	27	28	29	30
31						



Graduate students Lance Ahern and Deepak Sinha play chess on the table in front of Wood Center.



Students make their way to class as an early winter snow falls.

How to Enroll

Applying for Admission

When to Apply

If you're a high school senior, you should apply for admission during the first semester of your senior year. If you're a transfer student, you should apply six to nine months before the beginning of the semester in which you plan to enroll. You need to send your application by August 1 for the fall semester and December 1 for the spring semester. If you send your application after the deadlines, it will be processed as time permits.

You may reserve on-campus housing when your application for admission has been accepted. If you're interested in single student housing, you should send your application materials at least six months before you plan to enroll. For information on married student housing, contact the UAF Housing Office.

How to Apply

You can get application forms from the Office of Admissions and Records. The following must be received by the Office of Admissions and Records before your application will be considered:

1. Application for Admission — A $30 processing fee for a bachelor's degree or $15 for an associate degree or certificate must accompany your application.

2. Transcripts — If you haven't enrolled in a college or university before, you must have your official high school transcript sent to the Office of Admissions and Records.

If you've attended other colleges and/or universities, you must request official transcripts from *each* college or university you attended. The transcripts should be sent to the Office of Admissions and Records by the schools. *TRANSCRIPTS WILL NOT BE ACCEPTED IF YOU SUBMIT THEM.*

If you're a transfer applicant with less than 30 semester hours of credit, you must submit your high school transcript as well as college transcripts.

3. Test Results — If you're an entering freshman in a bachelor's degree program, you must submit the results of either the ACT or SAT examinations. Being accepted to UAF doesn't depend on minimum test scores; however, these test scores are used to determine your placement in English, mathematics and other freshman level courses. It's your responsibility to have the test results sent to the Office of Admissions and Records.

If you're applying for admission to an associate degree or certificate program, you must submit the results of the SAT, ACT or ASSET test.

If you qualify for an associate or certificate program, and have transferred in 30 semester hours of credit which include appropriate courses in English and mathematics, you don't need to submit test results.

You can get information on ACT or SAT testing centers, ASSET testing, test dates and obtaining test results, from your high school or from the UAF Testing Office.

Conditional and Final Acceptance

If you're a qualified applicant, a letter of acceptance will be mailed to you once the above items are received and processed. Your letter of acceptance will spell out any conditions under which you are being admitted.

If you're a qualified applicant in your last year of high school, or attending another college, your acceptance will be conditional until official transcripts are received which show you have satisfactorily completed the work in progress and, if you're a high school senior, that you have graduated.

Your acceptance to UAF is final only when all your credentials have been accepted by the Office of Admissions and Records.

Being accepted at UAF constitutes an agreement of mutual responsibility. You agree to abide by the rules and policies and to act in a responsible, mature manner. The university's contribution is to provide an appropriate academic atmosphere.

Immunization Policy

If you're a new student accepted for nine or more credits, you must submit the following:

1. A completed health inventory form to be submitted to the Center for Health and Counseling;
2. Negative tuberculin skin test or chest X-ray results;
3. Written proof from a medical authority of immunity to:
   a. Rubeola (measles)
   b. Rubella
   c. Diphtheria and Tetanus
   d. Polio

Your registration may be withheld for your second semester until these items are submitted.

Admission Requirements

Freshman

To qualify for admission as a freshman, you must meet one of the following:

Associate Degree

For admission to associate degree programs, you must be at least 18 years old or have earned a high school diploma.

If you're an associate degree or certificate student, and later wish to enter a baccalaureate degree program, you may be admitted after earning, with a "C" average, 14 credits at the 100 level or above, of which nine credits must satisfy general baccalaureate degree requirements.

Baccalaureate Degree

A. For admission to a baccalaureate degree program, you must have graduated from high school with an overall grade point average (GPA) of 2.0 (C) or higher. Your admission to a specific baccalaureate degree program is based on a combination of your high school grade point average and your completion of specific high school courses.

In addition, you must complete, with a minimum grade point average of 2.5, a high school core curriculum of at least 16 academic units. The units must 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 are strongly recommended.

Test results from the ACT or SAT must be received before you can be admitted.

B. If you've graduated from high school, but don't meet minimum entrance requirements for the baccalaureate degree,

you may be provisionally accepted provided you make up deficiencies by earning at least a "C" grade in each of the appropriate developmental or university courses, and complete nine credits of general baccalaureate degree requirements with a grade of "C" in each course.

C. If you haven't graduated from high school, haven't attended a college or university and are at least 21 years old, but do not meet minimum entrance requirements as a freshman, you may be considered on a case-by-case basis for unrestricted admission as an "undeclared" student by completing either the ACT or SAT with sufficiently high scores.

Transfer Students

If you're an applicant who has attended other accredited institutions, you are eligible for admission if you have a 2.0 GPA in your previous college work and an honorable dismissal from previous schools. If you're applying to a technical or scientific program, you may need to present a higher grade average and proof that you've completed appropriate background courses before you will be admitted to the program. If you're transferring in with fewer than 30 semester hours of transferable credit, you must also have a high school GPA of 2.0 or higher and must complete the ACT or SAT before registering. If you have attended an unaccredited postsecondary institution, your admission status will be determined on an individual basis.

International Students

If you're an international student or a recent immigrant to the United States, additional admission requirements apply to you:

A. English Language Proficiency Policy: In addition to meeting regular admission requirements, you must be able to read, write and speak English well enough to successfully complete your program.

TOEFL Test Requirements

1. If you're from a country where English is not the native language, you must present a satisfactory score on the Test of English as a Foreign Language (TOEFL). You can't use any other proof of English competency (such as English credits from other schools).

2. If you're a permanent resident on an immigrant visa, a TOEFL score is required if all your formal education is from a country where English is not the primary language, or when the documents presented for admission don't clearly indicate your proficiency in English.

3. You 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 you have been accepted for full-time enrollment and that you have funds to meet estimated expenses for one academic year. If you're in the U.S. on an F-1 visa, you must maintain a full-time course load; you may not enroll as a part-time student (less than 12 credits per semester).

2. You must sign a statement that funds are available to pay all expenses while you attend UAF, as well as the amount needed for round trip transportation between your home and Alaska. The minimum cost for attending UAF for one school year is $8,000. This amount covers university fees, room and board on campus, and a reasonable amount of personal expenses. It does not include transportation to and from Alaska, summer living or cold weather clothing costs. Since the application for the F-1 visa requires affirmation that you don't intend to live in the United States permanently, **you aren't eligible for resident tuition fees.**

3. Your application should reach Admissions and Records by March 1 for the fall semester or October 1 for the spring semester. Your application must be completed and accepted by August 1 for the fall semester and December 1 for the spring semester in order to allow time for your I-20 form to be issued. You can't reserve on-campus housing until your application for admission has been accepted. If you're interested in single student housing, you should file your application materials at least eight months before you plan to enroll.

HIGH SCHOOL ENTRANCE CREDIT REQUIREMENTS FOR ALL BACHELOR'S DEGREE PROGRAMS:

	English	Math	Social Science	Natural/ Phys. Sci.
H.S. Core Credits: Required for all freshmen (2.50 GPA in core-16 credit total)	4	3 in college preparatory mathematics (selected from Algebra I, II, geometry, trigonometry, elementary functions, precalculus or calculus)	3	3(Incl. 1 cr. lab sci. course in biology, chemistry or physics)
College of Liberal Arts: Applied Statistics, Computer Science or Mathematics majors	4	Algebra-2 Geometry-1 Trig-½ Adv Math-½	3	Nat. Sci.-2 Physics or Chemistry-1
Physical Educ. majors	4	Algebra-2 Elective-1-3	2	Biology-1 Physics or Chemistry-1 Elective-1
All other majors Liberal Arts		Same as entrance core		
College of Natural Sciences: All majors	4	Algebra-2 Geometry-1 Trig.-½	3	Physics or Chemistry-1 Biology or Elective-2
College of Rural Alaska: All majors		Same as entrance core		
School of Agriculture and Land Resources Management: Land Resources Mgt. majors	3 4	Algebra-2 Geometry-1 Trig-½	3	Physics or Chemistry-1 Biology or Elective-2
School of Engineering: All majors	4	Algebra-2 Geometry-1 Trig-½	3	Chemistry-1 Physics-1 Elective-1
School of Fisheries and Ocean Sciences: All majors	4	Algebra-2 Geometry-1 Trig.-½	3	Physics or Chemistry-1 Biology and/or Elective-2

School of Management:				
All majors*	4	Algebra-2 Geometry-1 Trig-½	3	Physics or Chemistry-1 Nat. Sci.-2

*Two years Foreign Language highly recommended.

School of Mineral Engineering:				
All majors	4	Algebra-2 Geometry-1 Trig-½	3	Physics or Chemistry-1 Nat. Sci.-2

Non-Degree Students

If you wish to attend UAF, but not as a degree student, you must be a high school graduate, or at least 18 years old. As a "non-degree student," you are subject to the placement examination requirements for freshman courses. You must maintain a 2.0 GPA to remain in good standing. You won't be considered a degree candidate until you've met regular admission requirements and filed transcripts. As a non-degree student you aren't eligible for financial aid or preregistration.

High School Students

If you're a qualified high school student, you may enroll in one or two UAF courses while you're still in high school. To qualify, you must present written recommendations from your high school counselor or principal, the written approval of your parents, and an official transcript indicating a satisfactory GPA in your high school work. If you're a high school senior with a GPA of at least 2.5, you may register for two courses for a maximum of six credits. If your GPA is between 2.0 and 2.5, you may register for one course each semester. If you're a junior with a GPA of at least 2.75, you may register for one course each semester. If you're a qualified freshman or sophomore high school student, you may register for one course each semester with the approval of the Director of Admissions and Records.

Students with Bachelor's Degrees

If you hold a bachelor's degree but have not defined or declared your graduate program, you may enroll as a non-degree student if space permits. You're in this category if you are:

1. Planning to take "interest courses."
2. Strengthening your preparation in order to be admitted to graduate study.
3. A transient student expecting to be at UAF only briefly.
4. Awaiting action on applications for graduate status.

Second Bachelor's Degree Programs — If you wish to complete a second bachelor's degree, you must apply for admission as an undergraduate transfer student.

Academic Bankruptcy for Returning Students

If you performed at an academic level which made you ineligible to continue your studies at UAF, and dropped out or were dismissed from school, academic bankruptcy can offer you a new undergraduate start.

When you want to resume your college work but find your previous UAF academic record an obstacle, you may apply for readmission on the basis that your prior academic record be disregarded. You begin your college study again with no credits attempted, no credits earned and no quality points reflected in subsequent grade point average calculations. You may use academic bankruptcy only once. You may request academic bankruptcy for records from present UAF units which were not part of UAF prior to fall 1987.

To declare academic bankruptcy, you must submit an Application for Academic Bankruptcy form and receive the approval of the dean of the college or school to which you are being admitted or readmitted. Before applying for admission on this basis, at least two years must have elapsed since the end of the last full-time semester you attended. Academic bankruptcy application forms are available at the Admissions and Records Office.

Your prior academic record remains a part of your overall academic record and appears on your transcript, but none of the credits you earned previously can be used in your new program. The only time these credits will be included, however, is in GPA computations for graduation with honors (See "Graduation with Honors"). You may be allowed advanced standing or a waiver of requirements just as any non-bankrupt student, but you won't be allowed credit-by-examination for courses lost in bankruptcy.

Course Placement

English and Mathematics

On the basis of test scores, if your background appears to be deficient in English and mathematics, you may be required to take remedial English and mathematics or both in addition to curriculum requirements. The basic English and mathematics courses are especially designed to help you achieve competency in the least amount of time.

Generally, you will be placed in ENGL 111 if both your ACT English and composite scores are 16 or above, if your enhanced ACT (EACT) English score is 18 and your composite score is 19, or if you have an SAT English score of 350 or above and a combined SAT score of 720 or above.

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

ACT-EACT Math Score (SAT)	*Number of Semesters of High School Math*	*UAF Math Placement*
26 or higher (540 or higher)	with 1-8	See Math Department
21 to 25-22 to 26 (460-530) with	6-8	MATH 107, 161
21 to 25-22-26 (460-530) with	less than 6	See Math Department
19 to 20-21 (430-450) with	7-8	MATH 107, 161
19 to 20-21 (430-450) with	less than 7	See Math Department
17 to 18-19 to 20 (400-420) with	8	MATH 107, 161
17 to 18-19 to 20 (400-420) with	4-7	See Math Department
17 to 18-19 to 20 (400-420) with	less than 4	DEVM 070
13 to 16-17 to 18 (360-390) with	1-8	DEVM 070
12 or below-16 or below (350 or below)	1-8	DEVM 060

Foreign Language

To continue the study of a foreign language you began in high school, you must take a placement test. If you don't place at a level appropriate to the amount of your previous language study, you can enroll for credit in a course that is one semester below your level. Work more than one semester below the normal level will be considered remedial and will carry no credit.

Transfer of Credit

Credit accepted for transfer to UAF which has been earned at other regionally accredited institutions, through military

educational experiences or credit accepted by special approval, is considered transfer credit. Where possible, transfer credit is equated with UAF courses.

The following regulations apply to transfer of credit:

1. You're only eligible for transfer of credit if you're an undergraduate degree or certificate candidate.
2. The applicability of transfer credit to your major and/or minor requirements must be approved by your major and/or minor department. As a transfer student, you must fulfill the UAF graduation and residency requirements, including those required for a particular program.
3. Undergraduate credits earned at the 100-level or above with a grade of "C" or higher at institutions accredited by one of the six regional accrediting agencies, will be considered for transfer.
4. Transfer credit is not included in computing your UAF grade point average.
5. As an entering transfer student, your class standing is based on the number of credits UAF accepts of your 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 score of 60 on the MOS Skill Qualification Test is required. A maximum of 49 credits combined from these sources can be applied toward your associate or bachelor's degree. Credit completed through the Community College of the Air Force or in Department of Defense courses are included in the category of military experience.
7. You may request special review for approval of transfer credit not meeting the requirements above by contacting the Office of Admissions and Records.

Undergraduate Admission Requirements in Brief

Admission Category	*Admission Requirements*
BACCALAUREATE	
Freshman*	High school graduation and GPA of 2.0 (C) Completion of 16 credit core with 2.5 GPA
Transfer Student — Less than 30 semester hours of credit*	Same requirements as for freshman (above) 2.0 (C) GPA in previous college work
Transfer Student — More than 30 semester hours of credit	2.0 (C) GPA in previous college work
ASSOCIATE	
Freshman and Transfer*	High school graduation or at least 18 years old
Non-High School Graduate*	GED or at least 18 years old
Non-Degree Student	High school graduation, GED or at least 18 years old
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

*Before registering, all first-time degree and certificate students must complete the ACT or the SAT, or ASSET test for associate and certificate students, which are used for course placement purposes. If you plan to take a 100-level written communication or mathematics course, a placement test is required; it is recommended for all entering students.

Alternative Ways to Earn Credit

Advanced Placement Credit

Advanced placement credit is awarded based on national or departmental placement examinations. Methods and standards for awarding advanced placement credit are listed below:

Local Advanced Placement Credit

English — If you're an incoming freshman with an English ACT score of 26 or higher, an English Enhanced ACT score of 30 or higher, or a verbal SAT score of 600 or higher, you may receive credit for ENGL 111X in one of two ways: 1) by enrolling in a 200 or 300 level *literature* course and completing it with a grade of "C" or better; or 2) waiting until you have sophomore standing *(30 credits or more)* and then completing ENGL 211 or 213 with a grade of "C" or better. You must submit an "Application for ENGL 111 Credit" form to the Office of Admissions and Records at the end of the semester in which you completed an advanced English course.

Foreign Language — If you have previous exposure to a language outside of college, and want to continue studying that language, you will need to take a placement test.

After completing the course and earning a grade of "C" or higher, you will be given credits for that course and, in addition, for the two immediately preceding prerequisite courses, if any, unless you have received university credit for these already. A native speaker may not receive credit for 101 and 102 levels.

This policy doesn't apply to special topics courses, individual study courses, literature or civilization courses.

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

College Board Advanced Placement

UAF grants advanced credit, with waiver of fees, for a score of three or higher in the College Board (CEEB) Advanced Placement Tests. Normally, you take these tests during your senior year in high school.

To receive CEEB Advanced Placement credit, you must request that an official report of your examination scores be sent to the Office of Admissions and Records. When you enroll, you will be awarded appropriate credit. You may receive credit for more than one Advanced Placement examination.

Examination	UAF Course Equivalent	Credits
American Gov't & Politics	PS 101	3
American History	HIST 131/132	6
Art: History	ART 261/262	6
Art: Studio (drawing)	ART electives	6
Art: Studio (gen portfolio)	ART electives	6
Biology	BIOL 105/106	8
Chemistry	CHEM 105/106	8
Classics: Virgil (Level 3)	LANG electives	8
Classics: Latin Lyric	LANG electives	8
Comparative Gov't & Politics	PS 201	3
Computer Science A	CS 201	3
Computer Science AB	CS 201/202	6
Economics-Micro	ECON 201	3
Economics-Macro	ECON 202	3
English Lit & Comp	ENGL 111	3
English Lang & Comp	ENGL 111	3
European History	HIST 101/102	6
French Language	FREN 101/102	6
French Literature	FREN elective (200 level)	2
	FREN 201	3
German Language	GER 101/102	10
German Literature	GER elective (200 level)	2
Math: Calculus AB	MATH 200	4
Math: Calculus BC	MATH 200/201	8
Music Listening & Literature	MUS 123	3
	MUS electives	3
Music Theory	MUS 131/132/133/134	8
Physics B	PHYS 103/104	8
Physics C: Mechanics	PHYS 211	4
Physics C: Elec & Mag	PHYS 212	4
Spanish Language	SPAN 101/102	10
Spanish Literature	SPAN elec (200 level)	2
	SPAN 201	3

Credit by Examination

There are several ways that you 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. Credit by examination is not considered UAF residence credit, and is not considered as part of the semester course load for full-time classification.

You will only be awarded credit by examination if you're currently enrolled, or if you were previously enrolled at UAF as a degree student.

The credit by examination options are briefly outlined below. More information can be obtained from the UAF Testing Services Office.

A. CLEP (College Level Examination Program)

CLEP is a national testing program that awards college credit for some introductory courses. The exams cost $38 each, and are administered by appointment. To register for a CLEP exam or to receive more information, contact Testing Services.

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

1. If you've earned as many as six semester credits in an area covered by a CLEP General Exam, no credit will be awarded for successfully completing that exam.
2. UAF currently accepts credit for all five CLEP General Exams listed below.
   English Composition w/Essay — Three ENGL 111 credits are granted for a 500 score.
   Humanities — Six humanities elective credits are granted for a 500 score.
   Mathematics — Three mathematics elective credits are granted for a 500 score.
   Natural Sciences — Six natural science elective credits are granted for a 500 score.
   Social Sciences/History — Six social science elective credits are granted for a 500 score.

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

1. You may not duplicate a course for which you've already been given credit, or for which you're currently enrolled.
2. If you've audited a course, you can't take the CLEP Subject Exam for that course for one year.
3. The minimum passing scores of approved CLEP Subject Exams is 50.

CLEP Subject Exams Currently Accepted

Test Name	UAF Course	
General Biology	BIOL 105-106	8 credits
Educational Psychology	ED 330	3 credits
Introductory Microeconomics	ECON 201	3 credits
Introductory Macroeconomics	ECON 202	3 credits
Western Civilization I	HIST 101	3 credits
Western Civilization II	HIST 102	3 credits
American History I	HIST 131	3 credits
American History II	HIST 132	3 credits
General Psychology	PSY 101	3 credits
Human Growth & Development	PSY 240	3 credits

B. DANTES-DSST (Standardized Subject Tests)

DSST is a national testing program which offers exams in traditional academic, vocational/technical and business subject areas. Credit is transferred for successfully completing DANTES tests as recommended by the American Council of Education. These tests are scheduled individually through the Testing Services Office. The cost is $40 per test, and results are available in 10 days to two weeks. Acceptance of the DANTES exam for a specific catalog

course or as a major/minor requirement is subject to departmental approval.

Local Credit by Exam Program

You can be awarded credit through the local credit by exam program if you're currently enrolled. Subject to departmental approval, most courses are available for credit by exam, except those with numbers ending -90 through -99 (193, 292, 497, etc.). A course challenged for credit can't duplicate a course for which you've already been granted credit, or for which you are currently enrolled. If you've audited a class, you can't request credit by examination for that class until one year has passed since the end of the semester in which you audited the course.

As part of the application process, you and your instructor will agree on the topics to be covered, the type of exam, the date of the exam and the grading method. You must complete the examination within 90 days of applying. If you miss this deadline, you'll have to reapply and pay an additional fee.

The nonrefundable fee is $15 per credit hour. Contact the Testing Services Office to obtain credit by examination forms or for more information on challenging a course.

Correspondence Study

The Independent Learning (Correspondence) Program, administered by the Center for Distance Education and Independent Learning, offers an alternative for people who seek a college education but cannot attend traditional classes. The unique advantage of correspondence study is its flexibility. You select your own hours of study and work at your own pace in surroundings you choose. Correspondence study offers you 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 you enroll in a correspondence course during the regular semester enrollment period and complete the course during the same semester, the course may be used in determining 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 you enroll 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.

An Independent Learning Program catalog detailing policies regarding enrollment, transfer, withdrawal, extension, reinstatement, fees, materials and course descriptions is available from the Center for Distance Education and Independent Learning, 130 Red Building, (907) 474-5353; FAX (907) 474-5402; BITNET:SYCDE@ALASKA.

Credit for Prior Learning

In acknowledging that individuals learn a great deal outside the walls of educational institutions, some UAF departments participate in a program where up to 45 credits for prior learning may be granted to you if you're an undergraduate degree or certificate student. For the Associate of Applied Science degree and the Bachelor of Technology degree, up to 60 credits may be awarded based on federal, state or professional certifications or licenses, if applicable to your degree program. Credentials are reviewed by faculty from participating departments who make recommendations for awarding prior learning credit for specific courses that will apply toward associate or baccalaureate degree requirements. Credit received for prior learning doesn't impact your GPA and is not considered as residence credit. For further information concerning credit for prior learning, contact the Advising Center at the Fairbanks campus.



Tanya Braun calls a friend from the telephone on the third floor of Wickersham Hall.

How to Register

Registration

You must register and pay your fees to attend classes and earn credit. Registration is held at the beginning of each semester on dates published in the academic calendar (see the inside front cover). For special programs, short courses, seminars and other classes that aren't part of the regular academic calendar, registration is held as needed.

Placement Tests

Results from American College Testing Program (ACT) or the Scholastic Aptitude Test (SAT) tests, or, for associate degree or certificate student, the ASSET test, are required if you're a first-time degree or certificate students, a transfer student with less than 30 acceptable credits, or 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 you can register. Contact the UAF Testing Office for further information.

To determine the best options, alternatives and sequences of classes to take, you should discuss your course selections early with your adviser (all degree and certificate students are required to have an adviser). Your adviser's signature is needed to enter the registration process.

Non-degree students may also see an adviser, and it is recommended for those taking nine or more credits in a semester, or for those who have accumulated 30 or more UAF credits.

Registration Drop Policy

You're expected to begin attending classes on the first day of instruction. In order to identify potentially available spaces in courses, departments may require that you attend the first class session or notify the department in advance that you can't attend the first class. If you miss the first class without notifying the department, you may be dropped from the course and the space assigned to a student on the waiting list.

At the Fairbanks campus, the class schedule provides information on which courses use the registration drop policy. After the first class session, lists of the names of the students who are to be dropped from classes are forwarded by *the department head* to the Office of Admissions and Records so the course can be removed from the students' enrollment files.

Because of the high demand for these courses, if you don't attend the first two meetings of a composition course (ENGL 111x, 211x, 213x, 313 or 414), or the first two meetings of a basic speech course (SPC 131x or 141x), you will be dropped from the class even if you preregistered.

If space becomes available in a class from which you have been dropped by the department, you will have to follow the drop/add procedure to add the course.

Credit-No-Credit Option

The credit-no-credit option encourages you to explore areas of interest not necessarily related to your major.

You may elect the credit-no-credit option for one undesignated elective each semester during the first two weeks of the semester. The instructor doesn't know your status in the course, and you complete the course the same way as other students in the class. Credit for the course is awarded if your performance is at the "C" level or higher; if your performance falls below that level, the course will not be recorded on your academic record. In either case, the course won't be included in any GPA calculations and, if credit is granted, a grade of "CR" will be entered for the course.

Elective courses taken to complete general university requirements or to meet the minimum credit requirements for the degree may be taken under this option. Major or minor requirements and those specified as foundation courses aren't allowed under this option.

Auditing

If you want to enroll in one or more courses for informational purposes only, you may register as an auditor if there is space in the class. You pay the standard credit fees for the course, but the credits are 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 are given, no credit is awarded and audited courses don't apply toward degree requirements, nor will they transfer to other institutions.

If you want to audit a course, you should indicate that at registration on your registration form.

If you want to change from audit to credit, you must request that before the deadline to add a course; changing from credit to audit must be done before the deadline for student-initiated withdrawals.

Instructors set the requirements under which an "AU" is to be recorded, and submit "AU" for auditors who satisfy the requirements. Auditors not receiving a grade of "AU" receive a "W."

If you've audited a class, you can't request local credit by examination for that class for one year.

Adding, Dropping and Withdrawing from Courses

Add/Drop — You may add courses to your schedule until the end of the published late registration period. You may drop a course during the first two weeks of the semester by following the drop/add procedure. Dropped courses don't appear on your academic record. Your academic adviser must sign the appropriate form for either an add or drop. Information about the add/drop procedure and forms may be obtained from the Office of Admissions and Records.

Withdrawing from an Individual Course — If you want to withdraw from an individual course after the first two weeks of the semester, you will need to follow the add/drop procedure. The last day you can withdraw from classes is published in the official academic calendar for each semester or session and is based on the date when 60 percent of the semester or session has passed. Courses from which you withdraw will appear on your academic record with "W" grades but will have no effect on your GPA.

Withdrawing from All of Your Classes — If you want to withdraw from all of your classes, you will need to obtain a total withdrawal form from the Office of Student Affairs. After 60 percent of the semester or session has passed, a total withdrawal can only be initiated by the dean of the college/school in which your major is located or, if you're undeclared, by the Vice Chancellor for Student Affairs.

Instructor signatures aren't required for any drop or withdrawal. Your instructors will be notified of your drop or withdrawal by the Office of Admission and Records. Advisers'

signatures aren't required when non-degree students add classes or drop or withdraw from classes. When you drop or withdraw from a class or classes, your signature is required.

The appeals route for students or faculty regarding the dean's decision concerning a request for a dean-initiated withdrawal 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

* **Add/drop** forms, **total withdrawal** forms and **credit-no-credit** forms must be submitted to the Office of Admissions and Records by the appropriate deadlines.

** 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.

Academic Regulations

Academic Honors

To be eligible for academic honors at the end of a semester, you must be a full-time undergraduate degree or certificate student who has completed at least 12 UAF credits that are graded with the letter grades A, B, C, D or F. If you have received an Incomplete or Deferred grade, your academic honors cannot be determined until those grades have been changed to permanent grades. The academic honors are recorded on your permanent record.

Chancellor's List — You will make the Chancellor's List with a semester GPA of 4.0

Dean's List — A GPA of 3.5 or higher earns you a place on the Dean's List.

Academic Progress

Instructors are responsible for making sure that you're aware of the grading policy for their course and that homework, exams, etc., are returned in a timely manner so that you know how you're doing in class. Midterm grade reports are optional for each campus of UAF. When used, as they are on the Fairbanks campus, they are required for all freshmen with a grade of less than "C."

Academic Standards

UAF's scholastic standards are designed so you can take action before your academic record deteriorates to the point that readmission to UAF or to another college or university becomes a problem. In all cases involving poor scholarship, you're encouraged to consult with your adviser, instructor or dean.

If you're an undergraduate or certificate student, or a non-degree student enrolled in more than nine credits, and you fail to earn a GPA of 2.0, you will be subject to scholastic action at the end of the semester. Depending on your circumstances, scholastic action may result in your being placed on probation, continued on probation or disqualified from the university.

Probation — If you're an undergraduate, certificate or non-degree student taking more than nine credits, you will be put on academic probation if your grade point average falls below 2.0. If you've previously been on probation and your semester and/or cumulative GPA is less than 2.0, you may be continued on probation if circumstances warrant. Your probation determination, which is made by the dean of the college/school in which you're majoring, may include conditions and/or credit limitations which you're expected to fulfill during your next enrollment at UAF. As a probation student, you may be referred for developmental advising/education and/or to a counseling center. In order to be removed from probation, your cumulative and semester GPAs must be at least 2.0.

Academic Disqualification — If your cumulative academic record indicates poor scholarship, the dean of the college/school in which you're majoring may recommend that you be disqualified from degree status. As a disqualified student, you may continue your enrollment at UAF only as a non-degree student, limited to enrolling in nine credits per semester, until reinstated into your program. You must apply for readmission when you wish to be restored to degree seeking status.

Good Standing — You are in good standing if you are an undergraduate student and your cumulative GPA and most recent semester GPA are 2.0 or better.

Attendance

You are expected to regularly attend classes; unexcused absences may result in a failing grade. You are responsible for conferring with your instructor concerning absences and the possibility of arranging to make up missed work.

If you choose to be absent from class to participate in university-sponsored or other activities, you may be permitted to make up any work you have missed, but you must make arrangements with your instructor before the absence. You and your instructor should make a good faith effort to assure that you are not unduly penalized for each absence. Such activities shouldn't be scheduled so that they conflict with the finals schedule.

Change of Grade Policy

A grade, other than an incomplete or deferred, submitted by your instructor after a course is completed, is assumed to be your final grade and it becomes part of your permanent academic record. Your grade won't be changed unless your instructor made a legitimate error in calculating the grade; a grade change must be approved by the instructor's unit head and dean. Grading errors must be corrected within 30 days after the beginning of the next regular semester.

Class Standing

Class standing is determined based on the total credits you've earned. Classifications are:

Freshman	0-29 credits
Sophomore	30-59 credits
Junior	60-89 credits
Senior	90 credits

Transfer students are given class standing based on 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.

Course Classifications

Courses that may be used to satisfy general degree requirements (e.g., Social Science Electives, Humanities Electives, etc.) are identified in the course description section of the catalog by the following designators:

h - Humanities	n - Natural Science
m - Mathematics	s - Social Science

For example, you may use HIST 341, History of Alaska, (3+0) s, to satisfy the "social science elective" requirement. Special topics courses are not given course classifications.

The Baccalaureate Core

Courses that may be used to satisfy general baccalaureate core requirements have course numbers ending with "X." For example, English 111X, Speech Communication 141X and other such courses meet specific core requirements. See the requirements for the baccalaureate core for a listing of other specific courses.

Courses meeting the upper division writing intensive and oral communication intensive requirements for the baccalaureate core are identified in the course description of the catalog with the following designators:

o - oral communication intensive course
w - writing intensive course

Note: Courses designated as meeting "w" or "o" requirements for the baccalaureate core *may not* meet written or oral communication requirements for degrees in effect prior to the fall of 1991.

Full-, Part-time Status/Study Load

If you're an undergraduate student registered for 12 or more semester credits, you are classified as a full-time student. In order to complete an undergraduate program in four years, you must earn 16 or 17 credits each semester. You may enroll in up to 18 credits per semester without special permission. To enroll in 19 credits or more, you need a 3.0 cumulative grade point average, and an overload approval by your adviser, department head and dean.

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

Grade Point Average (GPA) Computation/Grading System

To compute your GPA, the number of UAF credits you've attempted is divided into the number of grade points you've earned. To figure the number of grade points earned, the credits attempted for each course 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. Once you complete your bachelor's degree, your GPA in future work is calculated only on the credits and grades earned since your degree was awarded. An exception to this is made if you're officially admitted to a second bachelor's degree program.

All grades (original and retakes) for a course completed are included on your academic record, but only the last grade earned for a course is computed in your GPA unless the course is one that can be repeated for credit.

All course grades 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. Instructors may use pluses and/or minuses in grading; the symbols are advisory only and carry no numeric weight in computing the grade point average. If used, the pluses and minuses appear on grade reports and official transcripts. 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 your grade point average but credits earned with "pass" grades may meet degree requirements and may be used as a measure of satisfactory progress. Satisfactory performance is the equivalent of a grade of "C" or better in undergraduate course work and "B" or better in graduate courses. The entire class must be graded pass/fail and the grading system is noted in the class schedule.

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 courses such as theses, special projects, etc., that require more than one semester to complete.

AU **Audit** — A registration status indicating that you've enrolled for informational instruction only. No academic credit is granted. You may be given a "W" if you don't attend a course you are auditing. See "Auditing."

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

I **Incomplete** — A temporary grade used to indicate that you've satisfactorily completed (C or better) the majority of the work in a course, but for personal reasons beyond your control, haven't been able to complete the course during the regular semester. Normally, an incomplete is assigned when you've been in class until at least the last three weeks of the semester or session. Negligence or indifference aren't acceptable reasons for an "I" grade. The deferred grade (DF) may be used for those cases when you're unable to complete a course due to institutional reasons, such as a breakdown of laboratory equipment.

When the "I" grade is given, the instructor includes a statement of the work required of you to complete the course.

You must make up an incomplete within one year or it will automatically be changed to an "F" grade. The "I" grade is not computed in your 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." Seniors 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** — Instructors may award a No Basis (NB) grade if there is insufficient student progress and/or attendance for evaluation to occur. No credit is given, nor is "NB" calculated in the GPA. This is a permanent grade and may not be used to substitute for the Incomplete (I). It can't be removed by later completing outstanding work.

Honor Code

As a UAF student, you're subject to 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 you and every other UAF student. It is your responsibility to help maintain the integrity of the student community. UAF's Honor Code is as follows:

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.

Instructors can 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.

Student Behavioral Standards

Education at the university is conceived as training for citizenship as well as for personal self-improvement and development.

Generally, UAF behavioral regulations are designed to help you work efficiently in courses and live responsibly in the campus environment. They are not designed to ignore your individuality but rather to encourage you to exercise self-discipline and accept your social responsibility. These regulations, in most instances, were developed jointly by staff and students. You should become familiar with campus policies and regulations as published in the student handbook, the "A" Book, which is available at the Student Activities Office in Wood Center.

Information Release

Access to Records

Under the Family Educational Rights and Privacy Act of 1974, you are entitled, as a UAF student, to review your records. Except for directory information, no personally identifiable information is 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

Directory information is disclosed to the public on a routine basis unless you request, 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. You must complete this form each semester. No directory information is released during the first five working days of each semester. After that, information will be released when appropriate, unless you return the form to Admissions and Records.

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

Majors

You may declare a major when you are admitted as an undergraduate student to UAF. If you do not follow a curriculum leading to a specific degree, you will be enrolled with an "undeclared" major. If you are interested in a particular school or college, but have not selected a major, you will be enrolled as a non-major within that division. Non-degree students aren't eligible to declare a major or to be assigned class standing.

You may change majors only at the beginning of a semester. Change of department and/or major forms, available from Admissions and Records, must be completed and you need to have the written consent of the department heads concerned.

If you're an associate degree or certificate student wishing to declare a baccalaureate degree major, you must complete the admission process for bachelor's degree programs. (See "Admission Requirements.")

Petitions

Deviations from academic requirements and regulations for undergraduate students must be approved by academic petition. Petition forms, which require the signatures of your adviser, department head and dean, are available 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, but you should first submit them to the Office of Admissions and Records.

Reserving Courses for Graduate Programs

If you're a senior with only a few remaining requirements for your bachelor's degree, you 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, you must be in your 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 your bachelor's degree. (Reserving these courses, however, does not assure that they will be accepted by a graduate advisory committee as part of your eventual graduate program.)

Students' 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." You are encouraged to familiarize yourself 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 more difficult, the university attempts to provide needed counsel to help you gain insight and confidence in adjusting to your new environment. In some cases, if you are unable or unwilling to assume your social responsibilities as a citizen in the university community, the institution may terminate your enrollment, or take whatever action is deemed necessary and appropriate.

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)*		39 credits total (some degrees require more); of the 39 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	2.0 cumulative and in major	2.0 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 accepted for degree
Catalog Year that Can be Used to Meet Requirements	May use any catalog in effect when enrolled as a degree-seeking student, regardless of major - 5 year limit on catalog year	May use any catalog in effect when enrolled as a degree-seeking student, regardless of major - 7 year limit on catalog year
Second Degree Requirements	Only one A.A. 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

How to Earn a Degree

Requirements

To earn a UAF degree, you 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; major requirements are found in the Degrees and Programs section.

General University Requirements

You must earn at least 60 semester hours for an associate degree, and 120 semester hours for a bachelor's degree, including transfer credits, to earn a UAF degree. You must earn at least 39 upper division credits for bachelor's degrees.

At least 15 of your final 30 semester hours applicable to any associate degree must be earned at UAF. If you're a bachelor's degree student, you must earn at least 24 upper-division credits and at least 30 of the last 36 credits for the degree at UAF. For transfer students, you need to earn at UAF at least 12 semester credits in your major and at least three semester credits in your minor for the baccalaureate degree. Credit by examination doesn't qualify for residence credit.

You must earn a minimum GPA of 2.0 in all work as well as in your major and minor fields. In addition, you must earn a minimum grade of "C" in courses required for your major.

To receive a second associate of applied science degree, you must earn at least 12 credit hours beyond the first associate degree as well as completing all requirements for the major. As long as you've completed the additional 12-hour requirement, you may be awarded two degrees in one semester.

If you're a UAF graduate wanting to earn a second bachelor's degree, you must complete at least 24 hours of credit beyond the first bachelor's degree. You must meet all general university requirements, degree requirements, and major requirements for both degrees.

For students who hold bachelor's degrees from other colleges or universities, you must apply for admission as a transfer student. You have to meet all general university requirements (including residency requirements), degree requirements and major requirements.

Certifying that you have met all major and minor requirements is the responsibility of your department faculty, who notify the director of Admissions and Records.

No more than 15 semester hours of correspondence study work are accepted toward an associate degree; 32 semester hours are accepted toward a bachelor's degree. If you want to use correspondence study credits from a school other than UAF to satisfy degree requirements, you must have the approval of those courses by the dean of the school or college from which you will graduate; otherwise, you take the risk of not having the courses accepted.

Since ENGL 211X and 213X are writing courses, either will satisfy the second half of the requirement in written communication for the bachelor's degree. But you can't enroll in ENGL 211X or 213X without first fulfilling the ENGL 111X requirement. (See "Local Advanced Placement Credit - English.")

What catalog are you under?

If you are admitted to or transferring between an associate or baccalaureate degree program at UAF, regardless of your major, you may complete degree requirements that are in effect in any one of the academic years in which you are enrolled as a degree student. Only degree requirements in effect within seven academic years prior to your graduation date for a baccalaureate degree or five years for a certificate or associate degree may be used.

You are considered enrolled in your degree program when you complete the appropriate degree student registration procedure. If you do not enroll for a semester or more, or if you enroll through the non-degree student registration process, you aren't considered enrolled as a degree student during that time.

Residence Credit

Residence credit is UAF credit that you earn in formal classroom instruction, correspondence study, distance delivered courses, individual study or research through any unit of UAF. Transfer credit, advanced placement credit, credit for prior learning, formal service school credit, military service credit and credit granted through nationally prepared examinations are not considered residence credit, nor are credit by examination credits earned through locally prepared tests.

Graduation

Responsibility — You are responsible for meeting all requirements for graduation.

Application for Graduation — You need to formally apply for graduation. Applications for graduation must be filed with the Office of Admissions and Records during the semester you plan to graduate, but not later than the deadline which appears in the academic calendar.

Applications for graduation filed after the deadline are processed for graduation the following semester.

Diplomas and Commencement — UAF issues diplomas to graduates 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, you must earn a cumulative grade point average of 3.5 or higher in all college work attempted at UAF. For transfer students, you must complete 48 semester hours of credit at UAF for a baccalaureate degree or 24 semester hours of credit at UAF for an associate degree. Your 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.

If that overall cumulative grade point average is 3.5 or higher, you will be graduated *cum laude*; 3.8 or higher, *magna cum laude*; 4.0, *summa cum laude*, provided you meet the requirements stated above.

Degree Requirements

Certificate Programs

Certificate programs vary in length; however, you can usually complete them in one year.

Requirements

To enroll in a certificate program, and before receiving a certificate, you must formally be admitted. To earn a certificate, you may enroll in any course for which you are eligible.

To earn a certificate, you must earn at least 30 credits, including transfer credit. Fifteen semester hours must be residence credits. You must have a grade point average of 2.0 in all work, as well as in your major.

	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

ASSOCIATE OF ARTS REQUIREMENTS

The Associate of Arts degree represents the completion of broad-based college study. This degree may serve as a starting point for your career or as a steppingstone to a baccalaureate program. You may earn only one A.A. degree.

Requirements

All credits for the A.A. degree must be at the 100 level or above with 20 credits at the 200 level or above, and be distributed as follows:

Communication (9 credits)	Credits
ENGL 111X—Methods of Written Communication	3
ENGL 211X—Intermediate Exposition with Modes of Literature *OR*	
*ENGL 212—Business, Grant and Report Writing *OR*	
ENGL 213X—Intermediate Exposition	3
SPC 131X—Fundamentals or Oral Communication: Group Context *OR*	
SPC 141X—Fundamentals of Oral Communication: Public Context	3
Mathematics or natural science (10 credits)	
MATH 131X—Concepts and Contemporary Applications of Mathematics	3
or MATH 200, 201, 202, 262, 272 or any math course having one of these as a prerequisite)	
One natural science course, with lab, selected from the baccalaureate core	4
Mathematics or natural science elective	3
Humanities and social science (18 credits)	
ANTH/SOC 100X—Individual, Society and Culture	3
ECON/PS 100X—Political Economy	3
HIST 100X—Modern World History	3
ART/MUS/THR 200X—Aesthetic Appreciation: Interrelationship of Art, Drama and Music	3
ENGL/FL 200X—World Literatures	3
Humanities or social science elective	3
(Two semester length courses in a single non-English language taken at the university level may substitute for one of the required courses above and the three-credit humanities or social science elective.)	
Library and information skills (0-1 credit)	
Successful completion of library skills competency test or LS 100X or LS 101X	0-1
(It is strongly recommended that this requirement be completed before enrolling in the 200-level English course requirement or that it be completed concurrently with enrollment in the 200-level English core requirement.)	
General electives (22-23 credits)	
Any combination of courses. (Students planning to go on to the baccalaureate degree are advised to select courses meeting remaining core requirements and courses designated within baccalaureate majors and minors.)	22-23
Electives to total	**60**

*ENGL 212 doesn't fulfill the second half of the written communication requirement for the baccalaureate degree.

ASSOCIATE OF APPLIED SCIENCE REQUIREMENTS

Associate of Applied Science degrees are awarded in specific occupational fields with emphasis on entering the job market. This degree, usually seen as a terminal degree, can serve as the basis for additional training.

Requirements

All credits for the A.A.S. degree must be at the 100-level or above and be distributed as follows:

Communication (9 credits)	Credits
ENGL 111X—Methods of Written Communication	3
ENGL 211X—Intermediate Exposition with Modes of Literature *OR*	
*ENGL 212—Business, Grant and Report Writing *OR*	
ENGL 213X—Intermediate Exposition	3
SPC 131X—Fundamentals or Oral Communication: Group Context *OR*	
SPC 141X—Fundamentals of Oral Communication: Public Context	3
Mathematics or natural science (3 credits)	
A math or natural science course at the 100-level or above	3
Humanities, social sciences, math, natural sciences or Perspectives on the Human Condition	**3**
Major specialty	**at least 30**
Electives to total	**60**

Note: Students planning to go on to the baccalaureate degree need to work close with their advisers and are encouraged to select courses meeting core requirements, and courses designated within majors and minors.

*ENGL 212 doesn't fulfill the second half of the written communication requirement for the baccalaureate degree.

Majors Available for A.A.S. Degree: Airframe and Powerplant, Applied Accounting, Applied Small Business, Aviation Technology, Community Health Practitioner, Culinary Arts, Early Childhood Development, Early Childhood Education, Financial Institutions Management, Human Services Technology, Interdisciplinary, Office Professions, Public Safety-Fire Science.

(Requirements of majors listed are in the Degrees and Programs section of this catalog.)

Baccalaureate Degrees

THE BACCALAUREATE EXPERIENCE: THE CORE CURRICULUM

Undergraduate baccalaureate study at the University of Alaska Fairbanks is characterized by a common set of learning experiences known as the Core Curriculum. The core provides students with a shared foundation of skills and knowledge which, when combined with specialized study in the major and other specific degree requirements, is designed to prepare students to better meet the demands of life in the 21st century.

Through the baccalaureate core experience, every UAF student is expected to achieve:

* multi-dimensional competency in written and oral English—including comprehension of complex materials and clearly organized presentations of soundly reasoned thought in both oral and written form;
* a solid grasp of quantitative reasoning and mathematical application;
* an intellectual comfort with the sciences—including the objectivity of the scientific method, the frameworks which have nurtured scientific thought, the traditions of human inquiry, and the impact of technology on the world's ecosystems;
* an appreciation of cultural diversity and its implications for individual and group values, aesthetics and social and political institutions;
* an understanding of our global economic interdependence, sense of historical consciousness, and a more critical comprehension of literature and the arts;

* a better understanding of one's own values, other value systems and the relationship between value systems and life choices.

Through better integration of knowledge, it is expected that UAF graduates will more fully understand the changing world in which they will be expected to function.

The core curriculum applies to all students (new freshman and transfer students) admitted to and enrolling in baccalaureate degree programs at UAF in the fall semester, 1991, and thereafter.

Requirements *Credits*

Communication (9 credits):
The communication requirement is to be completed during the first two years of study.
ENGL 111X—Methods of Written Communication....3
ENGL 211X—Intermediate Exposition with Modes of Literature *OR*
ENGL 213X—Intermediate Exposition....3
SPC 131X—Fundamentals or Oral Communication: Group Context *OR*
SPC 141X—Fundamentals of Oral Communication: Public Context....3

Perspectives on the Human Condition (18 credits)
(Humanities and social sciences)
Complete the following six courses:
ANTH 100X/SOC 100X—Individual, Society and Culture....3
ECON/PS 100X—Political Economy....3
HIST 100X—Modern World History....3
ART/MUS/THR 200X—Aesthetic Appreciation: Interrelationship of Art, Drama and Music....3
ENGL/FL 200X—World Literatures....3
PHIL 322X—Ethics (Values and Choice)....3
OR complete 12 credits from the above courses plus two semester length courses in a single Alaska Native language or other non-English language taken at the university level.

Mathematics (3 credits)
The math requirement is to be completed during the first two years of study.
MATH 131X—Concepts and Contemporary Applications of Mathematics....3
OR MATH 200, 201, 202, 262, 272 or any math course having one of these as a prerequisite)

Natural Sciences
Complete two 4-credit courses, with labs, from approved natural science core courses with depth or breadth emphasis.
Breadth emphasis: The two courses must be in different natural sciences or must be interdisciplinary in nature.
Select two courses from the following:
BIOL 103X—Biology and Society *OR*
BIOL 104X—Natural History of Alaska....4
CHEM 100X—Chemistry and the Modern World....4
GEOS 120X—Earthquakes, Volcanos, Glaciers....4
MSL 111X—The Oceans....4
Depth emphasis: The two courses must be sequential courses or a two-semester survey in the basic natural sciences (biology, chemistry, earth science, physics). Select one sequence from the following:
BIOL 105X-106X—Fundamentals of Biology I and II....8
BIOL 111X-112X—Human Anatomy and Physiology I and II....8
CHEM 103X-104X—Basic General Chemistry/Beginnings in Biochemistry....8
CHEM 105X-106X—General Chemistry....8
GEOS 101X—The Dynamic Earth *and*
GEOS 102X—Environmental Geology....8
OR
GEOS 101X—The Dynamic Earth *and*
GEOS 112X—History of Earth and Life....8
PHYS 103X-104X—College Physics....8
PHYS 211-212X—General Physics....8

Library and Information Skills (0-1 credit)
Successful completion of library skills competency test or LS 100X or 101X prior to junior standing....0-1

Two designated writing intensive courses (w) and one oral communication intensive course (o) at the upper division level) (see degree and/or major requirements)....0 additional

Total Credits Required....38-39

BACHELOR OF ARTS REQUIREMENTS

Credits

Complete the baccalaureate core....38-39

Complete the following B.A. requirements in addition to the core:
Humanities and social sciences....18
Any combination of courses at the 100-level or above, with a minimum of 6 credits from the humanities and a minimum of 6 credits in the social sciences
OR
up to 12 credits in a non-English language taken at the university level and a minimum of 6 credits in social science

Mathematics....3
One course at the 100-level or above in mathematical sciences (math, computer science, statistics)

Minor complex*....at least 15
OR
Foreign/Alaska Native language option....12-18
Two years study of one foreign or Alaska Native language at the university level (high school language credits or native language proficiency may allow students to begin at the intermediate or advanced level)

Major complex*....at least 31

Electives....12-19

Minimum credits required for degree....120

Of the above, at least 39 credits must be taken in upper division (300-level or higher) courses.

Courses beyond 30 credits in a major complex and 15 credits in a minor complex which are not in the primary discipline of that major or minor may be used to fulfill the humanities, social sciences, mathematics or natural science requirements.

*Departmental requirements for majors and minors may exceed the minimums indicated. Specific requirements are listed in the Degrees and Programs section of the 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 Communication, Theater.

(Requirements of majors are listed in the Degrees and Programs section of this catalog.)

Minors Available for B.A. Degree: Accounting, Alaska Native Languages, Alaska Native Studies, Anthropology, Art, Asian Studies, Athletic Coaching, Aviation, Biological Sciences, Business Administration, Chemistry, Citizens' Law, Computer Information Systems, Computer Science, Economics, Secondary Education, Elementary Education, English, Eskimo, French, Geography, Geology, German, History, Humanities, Human Services, Japanese, Journalism, Justice, Linguistics, Mathematics, Military Science, Music, Natural Resources Management, Philosophy, Physical Education, Physics, Political Science, Psychology, Russian, Russian Studies, Sociology, Spanish, Speech Communication, Statistics, Theater, Travel Industry Management.

The following associate degree programs are approved as minors for the Bachelor of Arts degree: Applied Small Business, Aviation Technology, Culinary Arts, Early Childhood Development, Fire Science, Human Services Technology and Office Professions.

Double Major — If you're a Bachelor of Arts degree candidate, you may complete two majors rather than a major and a minor. You can select the majors from those approved for the Bachelor of Arts degree; you must complete all general university requirements *and* all major requirements for both majors. If one major is from a program which requires 120 total credits and the other major is from a program which requires 130 credits, you must complete 130 credits. You must declare both majors when you're admitted and/or through the change of major procedure. You'll need to follow the degree requirements in a single for both majors.

Double Degrees — If you want to earn more than one UAF bachelor's degree, you must complete all general requirements as well as all major and minor requirements (if any) for all degrees. You'll need to earn at least 24 semester credit hours beyond the total required for the first degree before any additional degrees can be awarded. For two degrees that you complete at the same time, you may follow requirements from two different catalogs.

BACHELOR OF SCIENCE REQUIREMENTS

Requirements *Credits*

Complete the baccalaureate core **38-39**

Complete the following B.S. requirements in addition to the core:

Natural sciences **8**
A one-year sequence in one natural science beyond the core. The total natural science courses used to satisfy this requirement as well as the core requirement shall represent at least two different natural sciences.

Mathematics
The Baccalaureate Core shall include a calculus course of at least 3 credits. In addition, a 3-credit course in mathematics, computer science or statistics is required.

Major complex* ..... **at least 30**

Minor complex (optional)* ..... **15 or more**

Electives **25-40**

Minimum credits required for degree **120***

Of the above, at least 39 credits must be taken in upper division (300-level or higher) courses.

Courses beyond 30 credits in a major complex and 15 credits in a minor complex which are not in the primary discipline of that major or minor may be used to fulfill the humanities, social sciences, mathematics or natural science requirements.

*Departmental requirements for majors and minors may exceed the minimums indicated and most B.S. degree programs require 130 credits. Specific requirements are listed in the Degrees and Programs section 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, Geological Engineering, Geology, Interdisciplinary Studies, Mathematics, Mechanical Engineering, Mining Engineering, Natural Resources Management, Petroleum Engineering, Physical Education, Physics, Psychology, Sociology, Statistics, Wildlife Management.

(Requirements of majors listed in the Degrees and Programs section of this catalog.)

Double Major — As a Bachelor of Science degree candidate, you may complete a double major instead of a single major. Your majors must be selected from those approved for the Bachelor of Science degree. You'll need to complete all general requirements plus all requirements for both majors. If you're completing a double major, you need to officially declare both majors either when you're admitted and/or through the change of major procedure. You'll need to follow the degree requirements in a single catalog for both majors.

Optional Minor — You may elect to complete a minor with the B.S. degree under the following circumstances:

1. You must declare your minor before the beginning of your final semester in the B.S. degree program. You need to complete a "Declaration of Minor" form and file it with Admissions and Records by the end of registration.
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 the catalog used for the major and general degree requirements.
3. You must satisfactorily complete the requirements for the minor before your B.S. degree will be awarded. The minor will be listed on your transcript along with the B.S. degree.

BACHELOR OF TECHNOLOGY REQUIREMENTS

Credits

Complete the baccalaureate core **38-39**

Complete the following B.T. requirements in addition to the core:

Communications (3 credits):
ENGL 314 (to count as one of the upper-division writing intensive courses) 3

Mathematics (3 credits):
One course at the 100-level or above in mathematical sciences 3

Computer competency (3 credits):
Any 3-credit computer application or computer science course 3

Technology and society (3 credits)

Area of specialization* ..... **minimum of 30**

Complete one of the following options:

Option 1: (33 credits):
Note: For this option, no more than 25 percent of total course work may be taken in the School of Management.
ACCT 101/102—Elementary Accounting 6
ECON 200—Principles of Economics 4
STAT 200—Elementary Probability and Statistics 3
BA 151—Introduction to Business 3
BA 307—Personnel Management 3
BA 325—Financial Management 3
BA 330—Legal Environment of Business 4
BA 343—Principles of Marketing 3
Specialty electives 3
(Adviser approved upper division internship or advanced technical experience).

Option 2: (38 credits):
Note: For this option, students must apply and be accepted to the Teachers for Alaska Program. The area of specialization must be one that can be certified for teaching.
ED 201—Introduction to Education 3
ED 299—Practicum in Education 2
ED 582—Teaching as Reflective Inquiry 4
ED 583—Teaching as Decision-Making and Invention 8
ED 585—Reflective Inquiry into Multicultural Classrooms and Communities 3
ED 586—Designing Learning Environments 3
ED 453—Secondary Student Teaching 12

Electives **1-7**

Minimum credits required for degree **120**

Of the above, at least 39 credits must be taken in upper division (300-level or higher) courses.

The candidate for the B.T. degree must have 1) a minimum of 30 semester credits at UAF in the area of specialization (either completed in residence or accepted by transfer as equivalent to specific UAF courses), and 2) demonstrated competence in an applied or technical field. Competence may be demonstrated as follows:

1. Having earned an Associate of Applied Science degree in one of the following active programs:
   - Airframe and Powerplant
   - Applied Accounting
   - Applied Small Business
   - Aviation Technology
   - Community Health Practitioner
   - Culinary Arts
   - Early Childhood Development
   - Early Childhood Education
   - Financial Institutions Management
   - Human Services Technology
   - Interdisciplinary
   - Office Professions
   - Public Safety-Fire Science
2. Substitute one of the following as a demonstration of competency in an applied or technical field with the approval of the Curricular Affairs Committee of the Faculty Senate:
   a. An A.A.S. or similar degree earned at another institution
   b. State or federal certification deemed appropriate by the faculty
   c. Journeyman status in trades and industry

BACHELOR OF BUSINESS ADMINISTRATION REQUIREMENTS

Requirements *Credits*

Complete the baccalaureate core **38-39**

Complete the following B.B.A. requirements in addition to the core:

Mathematics
MATH 161—Algebra for Business and Economics 3
MATH 262 should be taken to complete the mathematics requirement for the core.

Social Sciences and Statistics (10 credits)
STAT 200—Elementary Probability and Statistics 3
ECON 200—Principles of Economics 4
ECON 227—Intermediate Statistics for Economics and Business 3

Common Body of Knowledge (31 credits)
ACCT 101-102—Elementary Accounting 6
AIS 310—Intro to Management Information Systems *OR*
AIS 316—Accounting Information Systems 3
BA 325—Financial Management 3
BA 330—Legal Environment of Business 4
BA 343—Principles of Marketing 3
BA 360—Operations Management 3
BA 390—Organization Theory and Behavior 3
BA 462—Administrative Policy 3
ECON 324—Intermediate Macroeconomics *OR*
ECON 350—Money and Banking 3

Major complex* ..... **at least 27**

Minor complex (optional)** ..... **15 or more**

Electives ..... **13 or more**

Minimum credits required for degree **130**

Of the above, at least 39 credits must be taken in upper division (300-level or higher) courses.

* Departmental requirements for majors may exceed the minimums indicated. Specific requirements are listed in the Degrees and Programs section of the catalog.

** The minor must be selected outside of the School of Management. Requirements for minors may exceed 15 credits. Specific requirements are listed in the Degrees and Programs section of the catalog.

Majors Available for B.B.A. Degree: Accounting, Business Administration (Finance, Human Resource Management, International Business, Management, Management Information Systems, Marketing, Travel Industry Management), Economics.

(Requirements of majors are listed in the Degrees and Programs section of this catalog.)

BACHELOR OF EDUCATION REQUIREMENTS

See Education in Degrees and Programs section.

BACHELOR OF MUSIC REQUIREMENTS

See Music in Degrees and Programs section.

BACHELOR OF FINE ARTS REQUIREMENTS

B.F.A. general requirements are the same as the requirements for the B.A. except for the minor complex which is replaced by a minor specialization of 9 upper division credits in art.

Major Available for B.F.A. Degree: Art.



Senior Debora Lewis looks over the list of scholarships available to UAF students.

Fees and Financial Aid

Fees are for the Fairbanks campus only

Tuition

Total Credit Hours	Resident Student	Non-resident Student
1	$ 50	$ 50
2	100	100
3	150	150
4	200	600
5	250	750
6	300	900
7	350	1,050
8	400	1,200
9	450	1,350
10	500	1,500
11	550	1,650
12	600	1,800
13 or more	650	1,950

Students enrolled in post-baccalaureate or graduate credit courses (those numbered 500-699) are charged $100 per credit for residents to a maximum of $900; and $200 per credit for non-residents to a maximum of $1,800. The maximum charge for any combination of undergraduate and graduate credits doesn't exceed $900 for residents and $1,800 for non-residents.

Definition: Alaska Resident

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 or 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 attach 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)

Course Fees (See course descriptions)	$ 3 - 250
Deferred Fee Charge	20
Graduate Extended Registration Fee	200 or 300
Health Fees *(Required for full-time students: undergraduates taking 12 or more credits, and graduate students taking 9 or more credits.)*	
Health Center Fee	55
Health Insurance Fee	163
Housing Fees:	
Housing Reservation/Deposit Fee	75 - 100
Residence Halls	
Double Room/Double Occupancy	590
Single Room	710
Student Apartment Complex (each student)	780
Married Student Apartments	280-490/month
Board Plan (three plans)	800-850
Board Net	110
Late Add Fee	25-65
Late Payment Fee	25-65
Music Course Fees (music majors maximum: 105)	35-145
Parking Fee	75/year; 40/semester
Student Activity Fee (8 credits or more)	40

All fees are subject to change.

Definitions: Other Fees Associated with Registration

Course Fees — Not all courses have course fees associated with them. Fees for courses range from $3 to $250. See the course description section of the catalog to check on fees for individual courses.

Deferred Fee Charge — A processing fee of $20 is added to the total amount due when you're approved for deferred fee payment. See **Paying Fees.**

Graduate Extended Registration Fee — Graduate students extending registration from the previous semester must pay a graduate extended registration fee of $200 to $300.

Health Center Fee — The $55 Health Center fee provides basic medical and counseling services at the Center for Health and Counseling. All full time students, students living in university housing, and students purchasing the student health insurance plan pay the Health Center fee. For the purposes of fee payment, full time students are undergraduate students taking 12 or more credits and graduate students taking 9 or more credits or registered for "active" extended registration.

Active duty military students have the option of paying the Health Center fee. The Health Center fee will be $55. A waiver of this fee is available for full time students if: none of their courses meet on the main campus; they do not live in university housing; and they are not enrolled in the student health insurance plan. A health center fee waiver form may be obtained during fee payment at the beginning of the semester.

A brochure describing Center for Health and Counseling services is available at the center.

Health Insurance Fee — The university requires that all full time students and students living in university housing be covered by a health insurance plan. For the purposes of fee payment, full time students are undergraduate students taking 12 or more credits and graduate students taking 9 or more credits or registered for "active" extended registration.

At the time of fee payment the student will purchase the student health insurance plan through the university, or if covered by an alternate health insurance plan, may waive the student health insurance fee. The student health insurance waiver form is obtained by presenting indication of the alternate coverage at the time of fee payment. Waiver forms are available at the Center for Health and Counseling as well as at fee payment locations. Students enrolled in 6 - 11 credits have the option of purchasing the student health insurance plan if they also pay the Health Center fee.

The student health insurance fee is $163 per semester. The plan provides basic coverage for accidents and illnesses that are not pre-existing. Questions regarding the student health insurance plan can be directed to the insurance coordinator at the Center for Health and Counseling.

Health insurance coverage for spouse and/or dependents is also available. Contact the Center for Health and Counseling for information.

The international student health insurance plan provides the same benefits as the domestic plan. In addition, it provides coverage for medical evaluation or repatriation. The cost for international student health insurance is $418 for the year. In general, waivers are not available. Students seeking waivers must present evidence, in English, of equivalent coverage, to the insurance coordinator at the Center for Health and Counseling. Waivers will not be granted unless requested in advance of the fee payment period.

A brochure entitled *The Student Health Program* describes the student health insurance plan. The brochure includes information on benefits and exclusions and is available at the Center for Health and Counseling.

Housing Fees — When applying for housing, you need to send a $100 reservation **damage deposit** to the Housing Office with your 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 each semester. For more information, see Housing. If you don't live on campus, you may be authorized by the director of residence life 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.

Late Add Fee/Late Registration Fee — If you pay fees or add a class later than the last day designated for that purpose, you'll have to pay a late fee of $25 for the first working day, plus $5 for each succeeding working day to a maximum of $65. No late fee will be charged when you change from one section of a course to another or when you have to add another course to replace a canceled course in which you were previously registered. This fee is refunded only if all classes for which you've registered are canceled.

Music Course Fees — Fees are charged for the following services or facilities: private instruction (per 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.

Student Activity Fee — If you're carrying eight or more credit hours (including both on- and off-campus courses), or register for "active" extended registration, you will be charged a $40 per semester student activity fee. If you live in university housing, you will be charged the $40 fee regardless of the number of credit hours you take. You have the option of paying the $40 fee if you're taking one to seven credits.

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 Legislature. This fee also pays for the publication of the *Sun-Star*, the student newspaper.

Paying the campus activity fee entitled you to use the Patty Center recreational facilities, and be admitted at student prices to university sponsored athletic events. The fee also entitles you 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.

Other General Fees

(per use unless otherwise indicated)

Admission Processing Fee	
Certificate or Associate Degree Application	$ 15
Baccalaureate or Graduate Degree Application	30
Credit by Examination fee	15/credit
Late Placement and Guidance Test 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: Other General Fees

Admission Processing Fee — You must submit a $30 processing fee with your application for admission to a baccalaureate, master's or doctoral degree. A $15 fee is required with your application to a certificate or associate degree program.

Credit by examination fee — You will be charged a $15 per credit hour fee for credit by examination.

Late Placement and Guidance Test Fee — A fee of $5 is charged for a placement and guidance test taken at an unscheduled time.

Program Plan Fee — The Office 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 $5.

Records Duplication Charge — You may obtain copies of documents in your file in the Admissions and Records Office *(excluding transcripts from any school)* if time permits, by making a written request, for a cost of $2 per page to a maximum charge of $10 per request. These copies are unofficial and bear a statement to that effect. Mailing copies of documents provided through this service is not available.

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 on or before the first day of the course.
   2. No refund — withdrawal 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. You need to request a refund in writing to the business office when you withdraw. The date of withdrawal on your official withdrawal form, determines your eligibility for a refund.
4. If your registration is canceled as a result of disciplinary action, you forfeit all rights to a refund of any portion of your tuition and fees.
5. Vocational/technical course fees are 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 is 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?

You can apply for financial aid if you're a U.S. citizen or eligible non-citizen and are admitted or plan to be admitted to the university. 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, you 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 your 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, you 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 5 p.m. Monday through Friday. The telephone number is (907) 474-7256.

How Do Students Apply?

1. Complete and mail the financial aid application to apply for all financial aid programs except the Alaska Student Loan Program.
2. Complete a UAF Financial Aid information sheet and return it to the UAF Financial Aid Office.

   Completing these steps constitutes application for any financial aid offered at UAF, except student loans, State of Alaska programs and scholarships. A separate application is required for each loan program. You 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.

   You 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 your ability to pay is compared with UAF's standard expense budget. If the amount of money available is less than total college expenses, you have a financial need and are eligible for aid.

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

	Married Couple or Single Parent	Single Student Lives Alone	Single Student Lives in UAF Residence Hall
Tuition, fees*	$ 1,764	$ 1,764	$ 1,764
Books, supplies	500	500	500
Food, housing	6,345	4,770	3,446
Transportation	1,017	1,017	324
Misc./personal	1,188	1,188	1,188
TOTAL	$10,814	$9,239	$7,222

*Tuition for non-Alaska residents, add $2,600.

Standard budgets do not always fit everyone. If you have 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 your 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 $2,400 for the 1991-92 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 financial aid and SEIG applications available during the spring term.

The **Bureau of Indian Affairs** (BIA) offers federal grants to undergraduate full-time students. You must be at least one-quarter American Indian or Alaskan Native to apply. These grants are based on financial need and supplement 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 and the **Financial Aid Office** as well as various academic departments on campus. Separate applications are generally required for each scholarship. You 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, 208 Butrovich Building, Fairbanks, Alaska 99775, telephone (907) 474-7687.

If you're a freshman applicant with a GPA of 3.5 and a composite ACT score of 26 or an SAT score of 1200, you're eligible to receive a **Chancellor's Scholarship**. This is a one-year tuition waiver. If you're a **National Merit Finalist**, you're eligible to receive a $16,000 scholarship ($12,000 for Alaska residents) to cover costs for four years. Contact Admissions for more information.

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. You should apply as early as possible to the head of the department in which you plan 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 are 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, students must apply for the Pell Grant before the loan 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 5.5 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.

To apply for a university loan, you must be in good academic standing and have no outstanding debt with UAF. You are required to verify your need for the loan. Applications will be accepted from the first day of 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. A $2 service charge is assessed for each loan.

To apply, you must be in good academic standing and have no outstanding debt with UAF. Applications will be accepted from the first day of 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 given on the "Federal Financial Aid Fact Sheet." 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
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, you must be "in good standing" which means undergraduates must earn a cumulative 2.0 or higher grade point average for all course work for which financial aid was paid; graduate students must maintain at least a 3.0 GPA to be eligible. The semester GPA must be 1.5 for undergraduates or 2.5 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. You can receive aid for a maximum of 10 semesters or 156 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 if you fail to complete the required credits with the minimum GPA or 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 2.0 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 all other amounts due UAF at the time of disbursement must be paid before the proceeds of your financial aid are 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.

Proceeds of any financial aid will be used to pay all outstanding deferred fees, and all other past due amounts, when the financial aid is disbursed to you, regardless of the deferred fee payment due dates.

You should allow at least five days for processing after the award letter is signed and returned before inquiring about your check.

According to the Tax Reform Act of 1986, all scholarships, fellowships and federal financial aid grants are counted as taxable income to the extent these awards, either individually or together, exceed the cost of tuition and related expenses. It is your responsibility to report all such aid on your tax return.

When a student withdraws from classes, a refund of university charges may be due. Any refund due will first be applied to the federal, state and institutional financial aid programs from which the student received aid during the school year. The part of the refund applied to federal programs is equal to the proportionate amount received from the federal programs other than CWS earnings compared to the total of all aid received, exclusive of all work earnings. The remaining portion of any refund will be applied to state and institutional programs if the student received aid from these programs.

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.

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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.

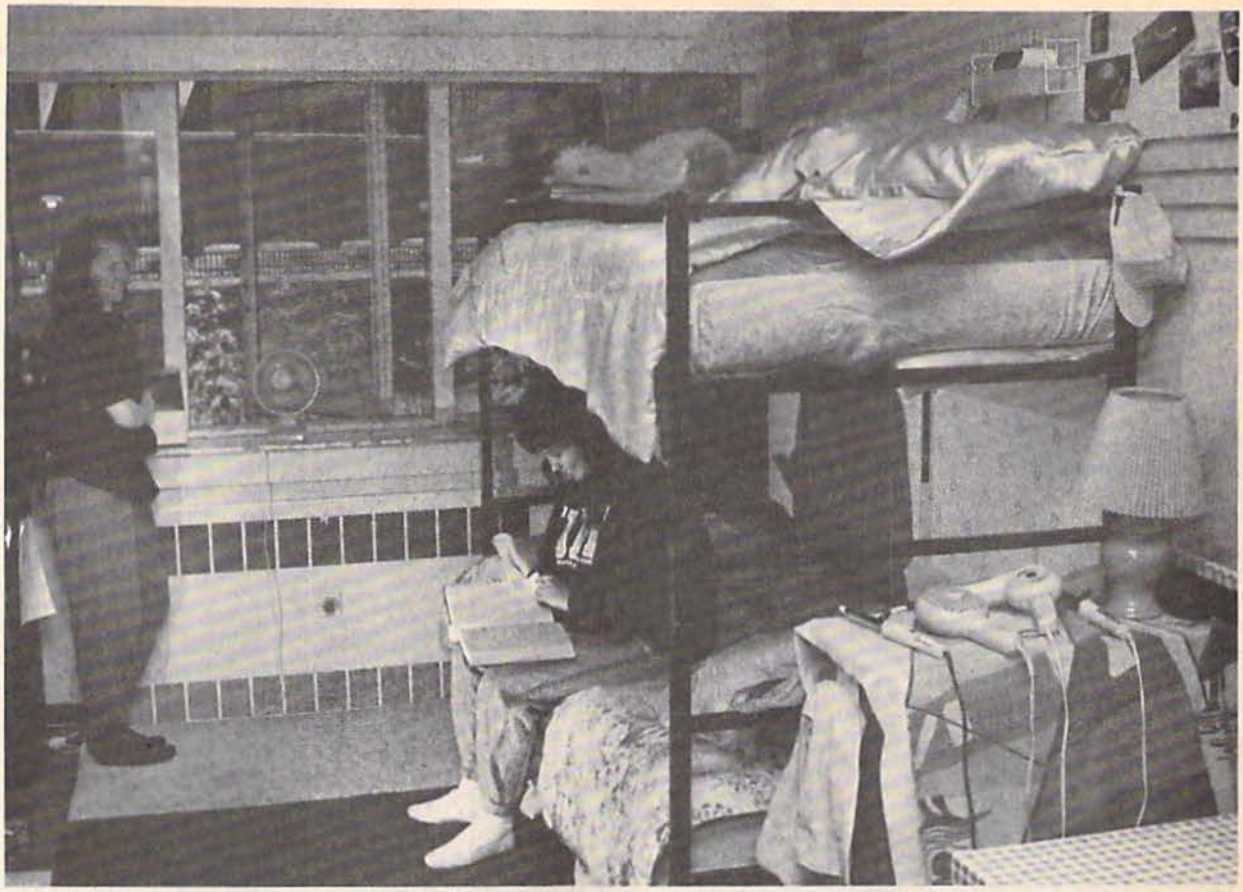
Financial Aid in Brief

Eligibility Requirements	Pell Grants	BIA Grants	Supplemental Educational Opportunity Grants (SEOG)	College Work Study (CWS)	UAF Scholarships	Stafford Loans (formerly guaranteed student 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



Cadets Pamela Hull and Marianne Miller work together to find the correct position on their map.



Melissa Andrews, left, and Stephanie Place, right, are roommates in Wickersham Hall.



Wickersham Hall is the only all women residence hall on campus.

Housing

Residence Halls

Each residence hall is staffed with a Residence Hall Director and several student assistants. The Residence Hall Director 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.

Who is Eligible?

In general, you 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. You 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, you should plan to complete your enrollment application well in advance.

How do Students Apply?

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 $100 reservation and damage deposit. Confirmation for residence hall housing is assured when you receive written notification from the Housing Office.

What Does it Cost?

Room Rent — Along with all other fees, room rent is due in full at registration. Current semester room charges are $590 per person in double rooms; $710 for single rooms; and $780 per person in apartments. 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 30 days prior to the official semester opening.

During occupancy, deposits are held until the contract period ends. Deposits are automatically transferred to subsequent semesters if you renew your housing contract.

Upon terminating your room contract, your deposit will be refunded if all contractual provisions have been met and no room cleaning or damage charges are 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 you don't maintain full-time academic status (as defined by the Housing Office). You may be released from contracts because of marriage, health reasons or other emergencies deemed appropriate by the director of residence life.

What about Meals?

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 $850.** You may purchase the **14 meals per week program at $825.** The third option **costs $800 and includes seven meals per week plus a $200 credit** at campus outlets operated by the contractor.

If you don't live on campus, you may be authorized by the Director of Residence Life 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.

What Facilities are Available?

Bartlett Hall houses 322 male and female students in double and single rooms on eight floors.

Lathrop Hall houses 140 male and female students in double rooms.

McIntosh Hall houses 102 male students in double and single rooms on four floors.

Moore Hall houses up to 322 students in double and single rooms within its eight floors.

Nerland Hall houses 102 male and female students in double and single rooms on four floors.

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.

Stevens Hall houses 102 male and female students in double and single rooms on four floors.

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.

The 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.

What are the Rooms Like?

Student rooms are equipped with a bed, desk, chair, mirror and closet space for each resident. You'll need to provide your 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.

What about Room Assignments?

Hall reservations are made based on date of receipt of deposit, provided application and deposit requirements have been completed. You'll be given your room assignment when you arrive.

Current resident graduate and upperclass students are given preference over incoming students for single rooms and apartments. 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

Family housing is provided in several different locations. All have access to free laundry facilities, parking facilities and limited storage space. All apartments are furnished except those at Yak Estates and Garden Apartments.

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

Who is Eligible?

In general, you 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. You should consult the housing staff about regulations concerning maximum terms of occupancy.

How do Students Apply?

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.

What Facilities are Available?

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

Harwood Hall houses 36 married student couples without children in 18 efficiency and 18 one-bedroom apartments. All of these apartments are furnished.

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.

Stuart Hall contains 12 furnished one-bedroom apartments available for married couples without children.

Walsh Hall has 13 one-bedroom furnished apartments occupied by married couples without children.

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.**



Annie Pavilla, a freshman majoring in secondary education, studies in the Rural Student Services lounge.

Student Services: Helping You Stay on Track

Academic Advising and Career Development

Academic Advising and the Advising Center

Deciding on a major, choosing electives and planning the classes you take each semester may be the most important decisions you make as a student at the university. Your adviser can help you by explaining programs and requirements, recommending courses and answering your questions. The role of your adviser is to help you choose a program to help you achieve academic and career goals.

If you are a declared major, your adviser will be a faculty member from your academic department.

If you haven't chosen a major yet, the Fairbanks campus Academic Advising Center is available for students who need help in choosing a major, selecting classes and planning an academic schedule. The Advising Center has general advisers and faculty members from various disciplines throughout campus. You have access to all members of the advising team and department advisers.

In addition to advising incoming freshmen and undeclared students, Advising Center staff are available to help transfer students, international students and rural students.

The Advising Center can also provide information on pre-professional programs.

The Advising Center, in cooperation with other departments, sponsors a variety of workshops on such subjects as degree programs and career exploration, as well as a wide range of special topics.

The Advising Center is located on the fifth floor of the Gruening Building, (907) 474-6396.

Alaska Teacher Placement

Alaska Teacher Placement (ATP) is Alaska's statewide clearinghouse for educational placement. ATP helps Alaska's public school districts employ 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' 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.

Alaska Teacher Placement is located in the Moore-Bartlett-Skarland Complex, (907) 474-6644.

Career Development Center

If you're an adult student needing career advice, the Career Development Center can help; the center offers help in making career decisions, designing training programs and developing job search skills. The counselor works with students on career planning, pre-admission advising, program planning, personal crisis intervention and other concerns.

A specialized library of occupational and educational information, a computerized career guidance system, software and individual consultations at various stages of the career development process are available. 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.

The center is a component of the School of Career and Continuing Education's Student Development and Learning Center. It is located at the Downtown Center, (907) 451-7223.

Career Services

Whether you're a freshman or a senior, an important part of your university experience is developing life and career goals. Career Services can help you work out an academic program to enhance your career potential. The Career Services Center provides career counseling, career information, assistance in finding summer employment and academic internships, as well as helping you find professional employment after you graduate.

You are encouraged to use 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 center coordinates these visits, and every attempt is made to match the employers' needs with those of students and alumni. Each spring semester, students are assisted in locating summer employment with a variety of employers across the state.

The Career Services Center is located on the fifth floor of the Gruening Building, (907) 474-7596.

Developmental Studies

Developmental studies courses are designed to: prepare people for admission to occupational-technical and university-academic programs; help students who are having trouble with courses or want to improve their efficiency; and help people who want to improve their skills but are not necessarily enrolled in a program.

The need for developmental studies is determined by high school transcripts, test scores, other achievement data and discussion with counselors. Students may also elect developmental studies courses based on personal assessment. 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 Studies, English and Mathematics.

International Student Advising

If you're a UAF student from another country, you may be faced with unique situations which American students don't usually encounter. You must comply with immigration regulations, adapt to a new and often strange culture, and adjust to the unique characteristics of American higher education. The international student adviser serves as a liaison between you and the U.S. Immigration Service, authorizes documents for student visas, helps you adjust to the U.S., Alaska and UAF, and provides counseling for personal and academic problems.

The international student adviser is located on the fifth floor of the Gruening Building, (907) 474-7317.

Rural Student Services

Rural Student Services helps rural Alaskans make the transition from a small-school and rural environment to university life. New students are offered help with forms and paperwork needed to attend the university, and provided with academic advising, career guidance, personal counseling and student advocacy. The program is geared toward Alaska Native students.

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

Recruiting activities in rural Alaska, as well as special approaches to better prepare students for college, are an emphasis of Rural Student Services.

Rural Student Services is located on the fifth floor of the Gruening Building, (907) 474-7871.

Student Development and Learning Center

The Student Development and Learning Center provides services 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.

The Student Development and Learning Center is located in the UAF Downtown Center, (907) 451-7223.

Tutoring Services

ASUAF tutoring provides subsidized tutorial services for individual courses on request. Please contact ASUAF (the student government) for more information, (907) 474-7355.

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.

LRC staff help students identify problem areas in courses and assist in developing personal study plans/skills. Students may 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, call the Learning Resource Center at (907) 451-7223.

The **Math Laboratory** provides flexible hour assistance to students 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, (907) 474-7332.

The **Writing Center** is staffed by English graduate students and upper class English majors. It is open Monday through Friday and is available to all enrolled students. The staff can help you improve your general grammar usage and writing techniques. They also review student writing projects during the successive draft process. For more information, contact the English department, (907) 474-7193.

Veterans' Training

The university is approved for veterans' training in degree and certificate programs. Although UAF does not have a veterans' office on campus, the Office of Admissions and Records can provide general information about educational benefits for veterans. 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 for veterans may contact the UAF Office of Admissions and Records, (907) 474-7821.

Bookstore

The UAF Bookstore provides books and supplies required for course work, but it also maintains wide selections of general reading books, college supplies, soft goods, calculators, personal care items, greeting cards and other merchandise which contribute to the overall educational experience offered by the university.

The bookstore is located in Constitution Hall, (907) 474-7348.

Disabled Student Services

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.

The University of Alaska Fairbanks is committed to equal opportunity for the disabled. Students with disabilities are encouraged to contact the disabled student services coordinator at the Center for Health and Counseling (907) 474-7043, or the section 504 coordinator at Employee Relations, 101 Eielson Building (907), 474-7919, as early as possible to get assistance. If students are not satisfied with actions taken by the University of Alaska Fairbanks in response to requests for assistance or accommodation, they may obtain a copy of the university's grievance procedures from either the disabled student services coordinator or the section 504 coordinator.

Health Center

The Center for Health and Counseling provides preventive, educational, diagnostic, and remedial medical and psychological services, as well as student health insurance claim processing services.

The medical staff includes a medical technologist, two advanced 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. Medications, laboratory services and medical supplies are available to students at reduced costs.

The counseling staff provides individual, group and crisis intervention counseling. Psychologists conduct individual counseling by appointment and group counseling is available for people with specific needs. A self-help lab is available to students, and provides information on self-management and self-improvement.

The substance abuse prevention program is administered through the Center for Health and Counseling.

The Center for Health and Counseling is located in the Health, Safety and Security Building, (907) 474-7043.

Orientation Programs

Adult Re-Entry Services

Over the past several years there has been a significant increase nationwide in the number of adult students on college campuses. More than half of UAF's students are adults who have returned to school. Adult Re-Entry Services offers an orientation for returning students at the start of each fall semester covering topics such as registration, planning class schedules, financial aid and family life.

For information on Adult Re-Entry Services, contact the Career Services, (907) 474-7596.

Early Orientation for New Students (EONS)

Just before registration each semester, Early Orientation for New Students (EONS) is offered to all new students, including freshmen, transfer, graduate, international and exchange students. Information on the program is mailed two months before the semester begins. EONS is designed to acquaint students with university policies, activities, resources, regulations and registration for classes. Attendance at EONS is highly recommended for new students.

For information, contact the Wood Center Student Activities Office, (907) 474-6025.

Wood Center

As a UAF student, you'll become very familiar with UAF's Wood Center. Many campus activities are centered here, as well as the offices of ASUAF, the student government. The center offers a wide range of facilities, services and programs for students, including a games area, photography labs, a pub, a lounge, snack bar and meeting rooms.



Wood Center is a popular gathering place for UAF students.



UAF guard Eric Brown charges the basket for a layup as UAA Seawolves players attempt to block the shot.

Campus Resources: What's Available

ASUAF

The Associated Students of the University of Alaska Fairbanks is the student government, with offices located in the Wood Center. All students who pay the activity fee are members. ASUAF runs service departments and programs dedicated to making the lives of UAF students easier and more convenient. ASUAF represents UAF students to the university administration and the Alaska Legislature. ASUAF officers are elected by the student body. For information, contact the ASUAF Office, (907) 474-7355.

Academic Computing

Academic Computing is UAF's student resource for computing facilities. The staff provide consulting services, access to documentation, seminars and classes, and acts as a "one stop" source for all academic user help. Academic Computing supports several hundred terminals and microcomputers installed on the UAF campus. Dial-up ports are used by many students to access the systems from their homes and each residence hall is equipped with at least one terminal for student use.

Primary academic computing support for UAF is provided through a Digital Equipment Corporation VAX 8800. This system is currently configured with 128 megabytes of main memory, 3.8 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 both BITNET and NorthWestNet, facilitating data transfer with several thousand other academic and research computers worldwide.

Various academic and research departments on campus have both mini- and microcomputers for research and instruction. There are also numerous microcomputer systems available for student use.

Academic Computing is located in the Rasmuson Library all hours study area; phone (907) 474-7191.

Alumni Relations

The UAF Alumni Association is an active part of the UAF campus. Alumni support athletics and other student activities by contributions of time and money. The UAFAA provides assistance to the university and its students and faculty.

The Alumni Relations office is located in 201 Constitution Hall, (907) 474-7081.

Athletics and Recreation

Facilities

The Patty Center includes a main gymnasium (basketball, volleyball, badminton) seating 2,100, a universal weight training room, a free-weight room, two handball/racquetball courts, a swimming pool, a shooting range, a 1,200-seat arena for ice skating and hockey, and men's and women's locker/shower/sauna rooms. A soccer and softball field is adjacent to the center, and the campus has many miles of cross-country trails for running and skiing, including a lighted ski trail.

Intercollegiate Athletics

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.

For information on athletics and recreation, call (907) 474-7205.

Intramural Sports

Intramural activities allow you to spend your leisure time in organized recreational activities. Students, faculty and staff of all skill levels may participate. The intramural program offers activities for men and women in more than 35 team and individual competitions each year.

Continuing Education

UAF's School of Career and Continuing Education responds 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, supervisory skill seminars for local businesses and agencies, and general programs for cultural enrichment.

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 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 general university requirements for the Bachelor of Arts degree. SCCE also serves the non-degree seeking student with evening courses for general interest.

For information, contact the School of Career and Continuing Education at the UAF Downtown Center, (907) 451-7223.

Exchange Programs in the U.S. and Abroad

Study Abroad Programs

Study abroad programs can broaden your view of the world while contributing academic credit toward your degree at UAF. In a study abroad experience you can master a foreign language, explore new lands and learn about other cultures. Study abroad has an important role to play in the larger process of educating citizens with global awareness,as well as preparing graduates of the university for many career opportunities that involve international affairs. There is no better time to live abroad than when you are a student, and students are encouraged to begin to plan for a study abroad experience early in

their careers at UAF, particularly since prior study of the language is often required.

In study abroad programs students enroll full time at UAF while attending school abroad; thus, you may use your Alaska Student Loan and many other forms of financial aid to study abroad. All credits are UAF credits, so no transfer of credits is required. Students are responsible for their transportation to the site, housing, food and incidental expenses at the host institution. UAF study abroad programs are extremely economical compared to other such programs.

Study abroad programs are administered by the UAF International Programs Council. The council's objective is to develop study abroad programs to support each of the foreign languages offers at UAF. The International Programs Office (202 Eielson Building, (907) 474-5327) exists to encourage and assist you in arranging a study abroad experience.

Nagoya Gakuin University, Japan — NGU is a small, private university located on the main Japanese island of Honshu, near Nagoya, the third largest city in Japan. NGU has emphasized business education, but recently expanded to include a foreign languages program of study. They offer a well-structured course of study in Japanese language and culture. One year of Japanese is prerequisite, and two years is strongly recommended. Exchange students reside in a new international students' dormitory.

Hokkaido University, Japan — Hokkaido is a national university in Sapporo, on the northern island of Hokkaido. Graduate students with advanced Japanese language ability will find especially good opportunities in fisheries and marine biology, anthropology and linguistics. Monbusho Fellowships, supported by the Japanese government, are available through a competitive program. Both undergraduate and graduate students may participate in a small but growing Japanese language program. Home stays are arranged for exchange students.

Soong Sil University, Korea — The campus of Soong Sil University is in Seoul, the capital and largest city of the Republic of Korea. The university started as Soong Sil College in Pyongyang, North Korea, in 1897. It was founded as the first Christian school in Korea by Dr. William Baird, an American missionary. Soong Sil is a comprehensive private university of 8,000 undergraduate and graduate students, offering a wide array of courses of study. At least one year of study of Korean is required. Exchange students may reside in a newly constructed international house or may request to stay with a host family.

University of Copenhagen, Denmark — The University of Copenhagen, founded in 1479, is a modern, comprehensive university steeped in old world tradition. University buildings are spread about one of Europe's most beautiful cities. Courses are offered at both undergraduate and graduate level in theology, medicine, social sciences, humanities and natural sciences. The language of instruction is Danish; a year of study of Danish at UAF is a prerequisite, and two years is recommended. Intensive Danish classes are arranged in Copenhagen as well.

McGill University, Canada — McGill University is an English-speaking university located in bilingual (French and English) Montreal, the largest city in the province of Quebec. Students can practice their French in the community while taking courses in English. There is no language requirement for the McGill University exchange. Students develop a plan of study to submit to the proposed host department at McGill, and work closely with a McGill faculty adviser. McGill has a particularly strong Northern Studies program. Most students rent apartments in the community.

Study in Europe — UAF belongs to NICSA (the Northwest Inter-institutional Council on Study Abroad), a consortium of colleges and universities in the Pacific Northwest that pool their resources to provide study abroad programs in Europe at modest cost. NICSA programs offer three terms per year (September through December, January through March, and April through June); students may elect to attend successive terms at the same or different sites. A comprehensive fee of approximately $4,000 per term covers tuition, room and board, textbooks, and excursions integrated with the courses. Intensive language study is offered (except in London), as well as content courses, primarily in the social sciences and humanities, taught in English. Home stays offer a chance to practice the language and experience the everyday culture of the country.

London, England — The vibrant metropolitan center of England, London offers a ceaseless banquet of cultural events and performances. Classes are held in central London, near the British Museum.

Cologne, Germany — One of the great cities of the Rhineland, in western Germany, Cologne dates back to 50 B.C., when it was established as a Roman colony. The Cologne program operates for the spring term only (April through June). One semester of college German is prerequisite. Language classes are offered at several levels to accommodate more advanced students.

Avignon, France — Avignon is a very old city in the Provence region of southern France. Classes are taught within the walls of the old city. Students must have completed two semesters of college French. The winter term offers an intensive immersion in French, with all classes taught in French; three semesters prior study is prerequisite.

Siena, Italy — Siena is located in the Tuscany Hills, 40 miles from Florence. Language instruction in included, and no prior study of Italian is required. Content courses often stress art and architecture, both of which are in abundance in and around Siena. Students share apartments with American and Italian students.

Programs in Development — The International Programs Council is currently working to establish study abroad programs in Spanish-, Russian- and Chinese-speaking locations. In each case, prior study of the language will be required. Check with the International Programs Office for new developments.

Western Undergraduate Exchange

UAF participates in the Western Undergraduate Exchange (WUE) administered by the Western Interstate Commission for Higher Education (WICHE). Residents of Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, North Dakota, Oregon, South Dakota, Utah and Wyoming may enroll in designated degree programs at a reduced tuition rate (the in-state tuition plus 50 percent of that amount). For a complete list of applicable degree programs or more information, contact the UAF Graduate School Office, 305 Signers' Hall, (907) 474-7464, or WICHE Student Exchange Program, Drawer P, Boulder, CO 80301-9752.

Westfield State College, Massachusetts

UAF maintains a student exchange program with Westfield State College in Massachusetts. The deadline for applying for this program is November 1. Contact the Student Affairs Office, 5th floor of the Gruening Building, (907) 474-7317.

Honor Societies

The following honor societies are active at UAF.

Alpha Phi Sigma (for criminal justice students)
Psi Chi (for psychology students)
Phi Kappa Phi (national honor society for students in all fields of study)
Sigma Xi (for science students)
Tau Beta Pi (for engineering students)

Honors Program

The Honors Program at UAF provides 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 Honors Program is based on the conviction 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 midyear. Credentials for admission to the university must be filed separately and should be forwarded to the Office of Admissions and Records at the time of application to the Honors Program.

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 enrichment 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, contact: The Honors Program, Box 900120, University of Alaska Fairbanks, Fairbanks, Alaska 99775, or call the Honors House, 515 Copper Lane, (907) 474-6612.

Library

The Elmer E. Rasmuson Library is the largest in the state, with more than 1.5 million volumes. In addition to its size, the library provides electronic access to its collections via *Gnosis*, its on-line catalog; *ElmerNet*, its on-line index to periodicals; and on-line searching.

Gnosis serves as the library's on-line catalog, and as the library's circulation system. *Gnosis* can be searched by author, title, subject, call number or keyword via terminals in the library building or through any terminal connected to UACN, the university's computer network. Students outside the library and UACN can dial into *Gnosis* with a computer and modem. Students can obtain a *Gnosis* card, which gives them library borrowing privileges, at the distribution counter on Level 4.

ElmerNet contains *LaserCat*, a database which provides access to more than 3.2 million titles held by more than 400 libraries in the western United States. In addition to *LaserCat*, *ElmerNet* carries indexes to the periodical literature covering such fields a general periodicals, management, literature, education, engineering and the biological sciences. The network contains more than 10 million citations. Interlibrary loan services allow UAF students to borrow, at no charge, books and periodicals owned by other libraries.

When needed information is not found on *Gnosis*, *ElmerNet* or *LaserCat*, the library offers on-line searching of databases available nationally and internationally. There is a small fee for on-line searching services.

An experienced and highly qualified reference staff provide assistance to students. A library orientation course (LS 101) teaches students how to conduct library research and use library resources.

Collections contained in the library include the world-class Alaska and Polar Regions Collections, covering books, periodicals, archives, manuscripts, historical photographs, oral histories and maps. The Rasmuson Library is also a federal documents depository, receiving 80 percent of the materials published by the U.S. Government Printing Office.

The Fairbanks node of the University of Alaska Computer Network (UACN) is located in the library. A variety of personal computers and software is available for use by students, as well as typewriters and calculators. A study area is open 23 hours a day year round.

The Bio-Medical Library, located in the Arctic Health Research Building on the West Ridge, is a branch of the Rasmuson Library. Collections in the Bio-Medical Library number approximately 36,000 volumes, the majority of which are periodicals.

For further information, contact the Rasmuson Library director's office at (907) 474-7224.

Museum

While some 100,000 people visit the University of Alaska Museum each year, the museum is more than a place to look at interesting objects. The museum is also a campus resource and research center, and the staff conducts field work, teaches university courses and publishes reports.

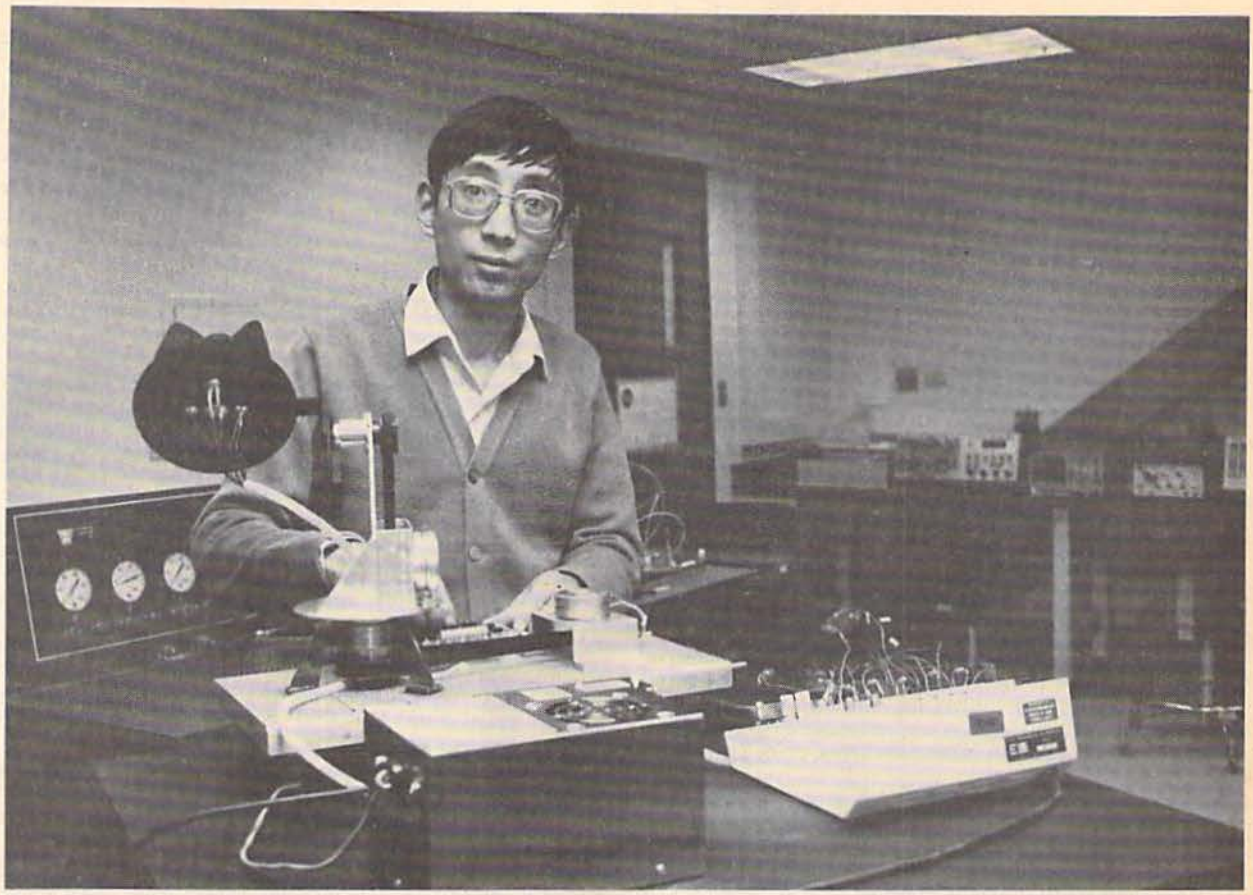
Resources at the museum include the aquatic collection, the archaeological collection, the ethnographic collection, the art collection, the herbarium, the geology collection, the Tephrachronology Center, the terrestrial vertebrate collection, the Alaska Native Heritage Film Project and the Alaska Quaternary Center.

Objects from the collections are used for demonstration and comparative studies in classrooms and laboratories. For information, contact the University of Alaska Museum, (907) 474-7505.

Summer Sessions

A wide variety of academic opportunities are offered to residents and visitors during the summer. Courses are open to undergraduate and graduate students seeking degrees as well as to non-degree students with special interests. Students may choose from teacher training and enhancement courses, cross-cultural and arctic studies, intensive foreign language courses, and field experiences in areas such as archaeology, biology, geology and marine science. Additionally, basic degree requirements and courses heavily enrolled in during the fall and spring semesters are often available.

Summer Sessions faculty include members of the regular teaching staff, supplemented by outstanding visiting instructors. For more information contact Summer Sessions, 2nd floor Signers' Hall, (907) 474-7021.



Mechanical engineering graduate student Lu Xiancheng adjusts the solar tracking device he built as an undergraduate.



School of Fisheries and Ocean Sciences graduate student Thomas Ostholm works at the Seward Marine Center.

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, biochemistry/molecular biology, 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 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. Full tuition is waived for graduate assistants. The Financial Aid office oversees student loans and work-study programs, and the University of Alaska Foundation administers scholarship programs. The application deadline for financial aid is 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 ($590 to $780 per semester) and family housing apartments ($280 to $490 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. Forty 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, are included in calculating 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 $30 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.

Graduate students should apply for admission at least six to nine months before the beginning of the semester in which they plan to enroll. 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 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: anthropology, 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 Building
University of Alaska Fairbanks
Fairbanks, AK 99775-0770

Graduate Degree Programs

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. Biological Sciences*

Business Administration
M.B.A.**

Chemistry
M.A. Chemistry*
M.S. Chemistry*
M.A.T. Chemistry
Ph.D. Biochemistry/ Molecular Biology*

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

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

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

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

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 access to the Pacific Ocean, the Arctic Ocean, glaciers and permafrost areas.

In addition to research carried out in its academic departments, the university has a number of research centers that focus upon problems of the Arctic. These include the environmental impact of human activities, the development of renewable and non-renewable resources, energy sources and the cultural understanding and preservation of peoples of the North.

While most student research is provided by graduate students, UAF does provide opportunities for some undergraduate students to participate in basic and applied research. Several departments have summer undergraduate research programs. Contact the Chemistry Department and the Physics Department for information.

UAF's researchers are among the best. To cite but a few recent accomplishments:

- Scientists at the Institute of Arctic Biology discovered "supercooling" in arctic ground squirrels. Understanding the mechanisms the animals use to hibernate at below freezing body-temperature could have a major impact on the practice of human medicine.
- When the *Exxon Valdez* ran aground in Prince William Sound in March 1989, scientists from UAF were called upon to help. Institute of Marine Science researchers helped predict the movement of the oil; the Institute of Arctic Biology was named UAF's coordinating agency for analysis of the spill's biological impact; and the Geophysical Institute research used satellite data to map the movement of the spill.
- When Mt. Redoubt and Mt. Augustine erupted in recent years, the Alaska Volcano Observatory, of which UAF is a major member, predicted the explosions. The timely information saved millions of dollars by early warnings to the business, industrial and military sectors, and may save lives in the event of a future catastrophic eruption.
- This past year, joint research was initiated by UAF agricultural scientists and researchers in the Soviet Union. Scientists will conduct parallel studies at similar latitudes and climatic conditions and compare results.
- UAF researchers developed a brucellosis vaccine that saves reindeer calves, and benefits reindeer herders across northern Alaska.
- As of January 1989, the Polar Ice Coring Office (PICO) was officially moved to UAF. PICO is supported by the National Science Foundation and provides logistical support and coordination on federally support ice coring projects. With PICO support, Geophysical Institute scientists in Greenland succeeded in drilling the deepest-ever glacial borehole using a hot-water drilling technique.
- The Arctic National Wildlife Refuge is a prime area for caribou, and perhaps for oil development. University studies have provided decision-makers with essential information on the area.
- A UAF scientist was awarded a Fulbright Scholarship to study and teach Native languages in the Soviet Union.
- UAF's Mineral Industry Research Laboratory investigates a process that has the potential to substantially reduce the cost of recovering valuable minerals from Alaskan ores.

Institutes, Stations and Centers

Agricultural and Forestry Experiment Station

AFES research increases the efficiency of production of food and wood products, and helps Alaska wisely use its land for agriculture, forestry and recreation.

Alaska Cooperative Fishery and Wildlife Research Units

Emphasis of the fishery unit is on the ecology and fisheries of aquatic ecosystems. The wildlife unit focuses on seabird ecology, wildlife population dynamics and the environmental impact of human activity.

Alaska Native Language Center

The center documents and promotes the use of the Indian and Eskimo languages of Alaska.

Center for Cross-Cultural Studies

This center undertakes research to develop the human resources of Alaska's multicultural society.

Fishery Industrial Technology Center

Located in Kodiak, the center lends scientific and technical expertise to the harvesting, processing and marketing efforts of the fishing industry.

Geophysical Institute

GI focuses on high-latitude geophysical phenomena in space physics, aeronomy, atmospheric sciences, solid earth research and ice physics.

Institute of Arctic Biology

IAB studies focus on the adaptation of plants, animals and humans to past and present climates in the Arctic.

Institute of Marine Science

IMS has research programs in biological, chemical, fisheries and physical oceanography.

Institute of Northern Engineering

INE focuses on solving the unique engineering and water-related problems in Alaska and other northern regions.

Juneau Center for Fisheries and Ocean Sciences

The center focuses on research on the life history, pathology and management of marine fish and invertebrates.

Mineral Industry Research Laboratory

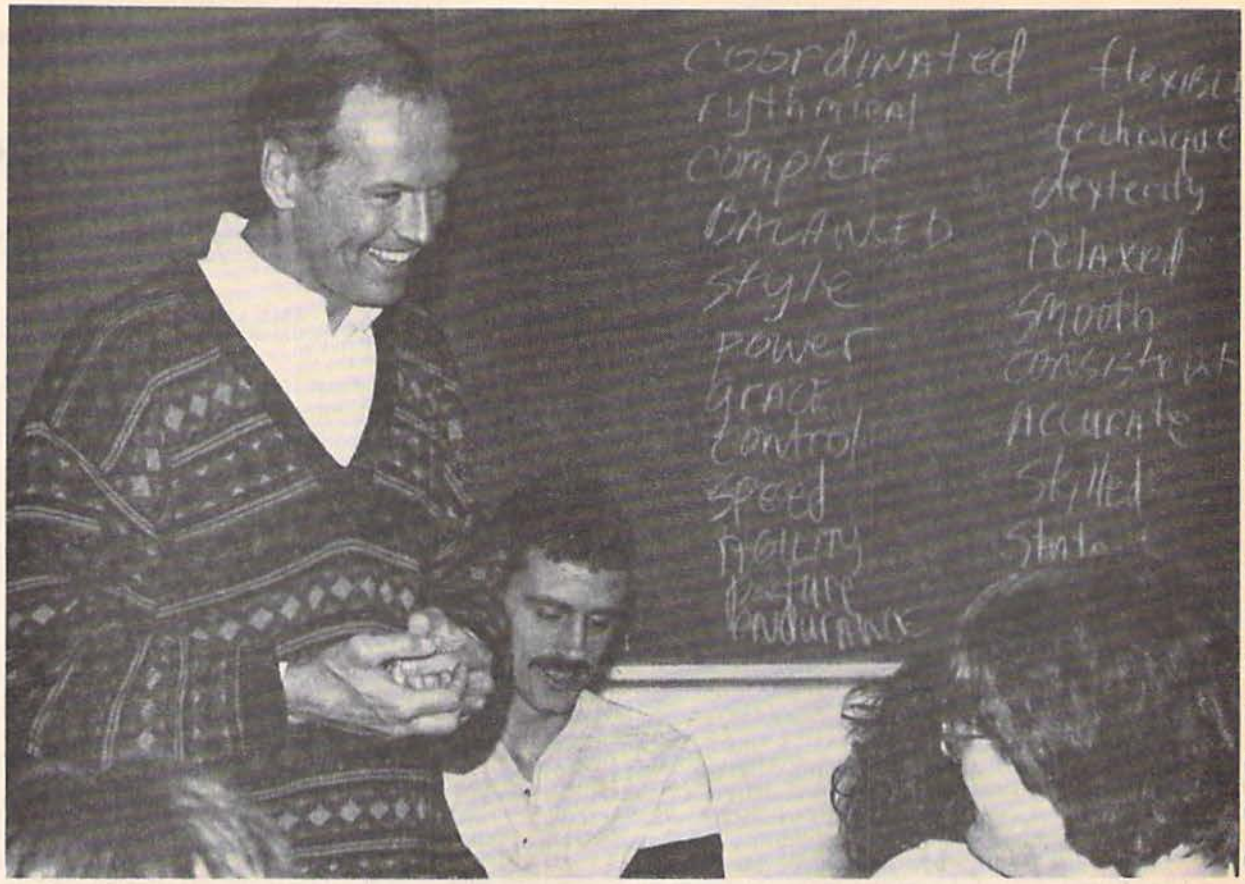
MIRL conducts basic and applied research to aid in the development of Alaska's mineral and energy resources.

Petroleum Development Laboratory

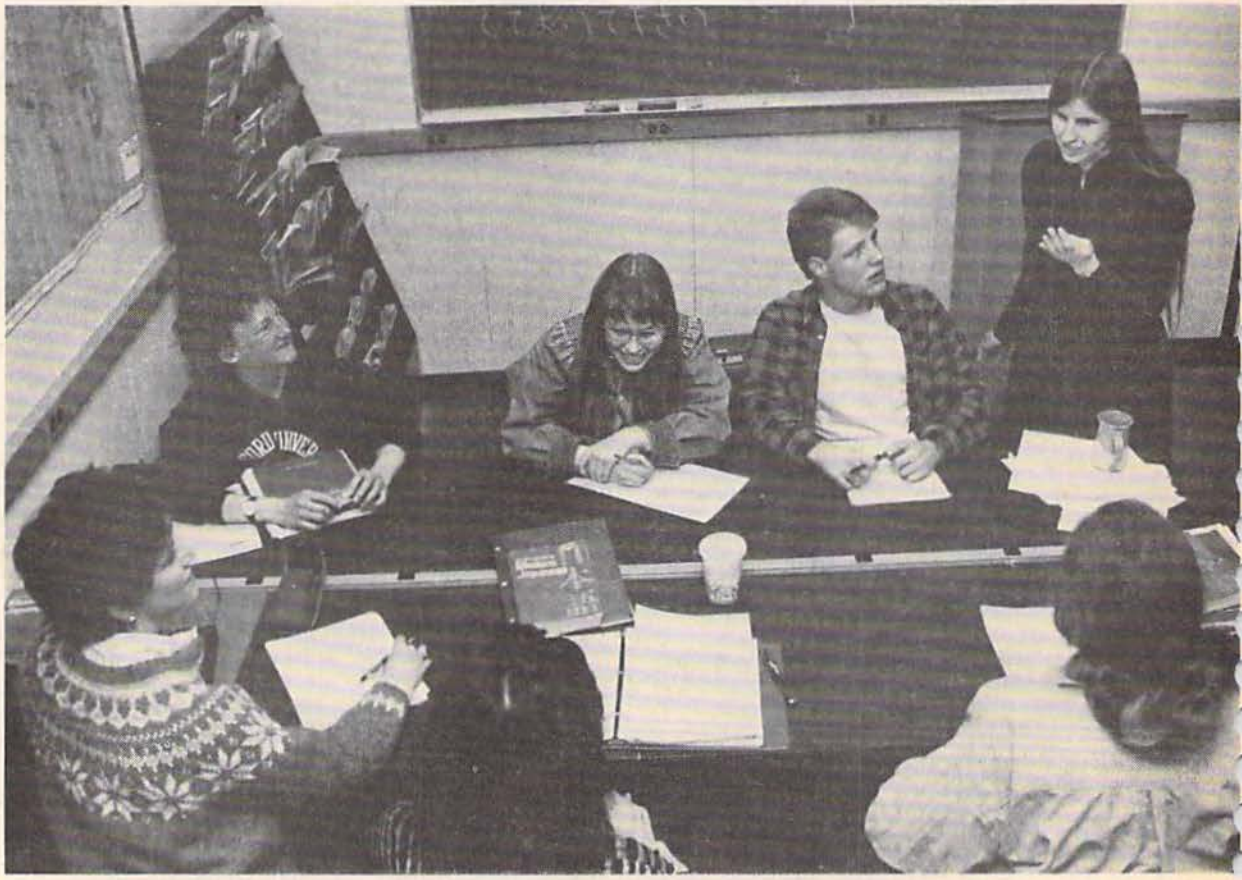
PDL works to develop technology to maximize the recovery of Alaska's petroleum and natural gas resources.

University of Alaska Museum

The major objective of the museum is the continuing development of systematic collections that are available for research and educational purposes.



Associate Professor Tom Wells lectures a physical education class.



Associate Professor Karen Colligan-Taylor and students in her Japanese class discuss the day's activities in Japanese.

Colleges and Schools

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, such as the sciences and mathematics. The following is a list of UAF's colleges and schools and their undergraduate offerings.

Colleges

Liberal Arts, College of *Anne D. Shinkwin, Dean*

The College of Liberal Arts provides a broad liberal arts education to UAF students whatever their specialization. The college includes disciplines in the social sciences, humanities, performing arts and mathematical sciences, as well as professional programs in journalism and broadcasting, and physical education. Its courses also emphasize writing, oral communication and mathematics skills, and foster an appreciation for the arts through active programs in visual art, music and theater. The College of Liberal Arts provides a variety of courses to satisfy core curriculum requirements for students, and aims to increase its national and international reputation in northern studies. In addition, it offers a growing number of courses in Asian languages in response to increased demand recognizing Alaska's present and future business relations with the Asian Pacific Rim. The college sponsors the Alaska Living History series which brings men and women to the campus who have helped shape the state of Alaska. The college includes the departments of Alaska Native languages, anthropology, art, English, foreign languages and literatures, geography, history, journalism and broadcasting, library science, linguistics, mathematical sciences, military science, music, philosophy and humanities, physical education, political science/justice, speech communication and theater.

Natural Sciences, College of *Paul Reichardt, Dean*

Students in the College of Natural Sciences have one of the most exciting natural laboratories in which to learn. CNS has undergraduate programs in biology, geology, chemistry, physics and wildlife management, all of which offer research opportunities. The college also offers two interdisciplinary programs, in earth sciences and general sciences, intended especially for those seeking teaching certificates. The College of Natural Sciences also provides students with a variety of courses to satisfy science requirements for graduation. The research institutes associated with the college—the Geophysical Institute, the Institute of Arctic Biology and the Alaska Cooperative Wildlife Research Unit—are nationally and internationally recognized. CNS includes the departments of biology and wildlife, chemistry, geology and geophysics, and physics. In addition, the University of Alaska Museum is an integral part of the college, providing instructional, research and public service opportunities for students, faculty and the general public.

College of Rural Alaska *Gerald V. Mohatt, Dean*

The College of Rural Alaska gives particular consideration to Alaska's rural residents and students in non-traditional settings. This college offers programs in the behavioral sciences, social work and education. Alaskan trained teachers and social workers are in demand in Alaska, and these programs are nationally accredited. The college has branch campuses in Bethel, Dillingham, Kotzebue and Nome, and has centers throughout the state, extending from Barrow to the Aleutians. 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. The five departments of behavioral sciences and human services, education, general studies, rural development, and vocational/technical education, all work to prepare students to be more sensitive to cross-cultural settings and diversity. Research and development activities involving issues associated with rural Alaska are supported and administered through the Center for Cross-Cultural Studies.

Schools

Agriculture and Land Resources Management, School of *James V. Drew, Dean*

Undergraduate programs at the School of Agriculture and Land Resources Management lead to a Bachelor of Science degree in natural resources management, with options in natural resources, forestry and agriculture. Research is conducted through the Agricultural and Forestry Experiment Station, with facilities in Fairbanks and Palmer, and through the Forest Soils Laboratory in Fairbanks. SALRM's courses and programs were developed in close cooperation with many university units and local, state and federal agencies and groups. Through these cooperative arrangements, students are provided with many opportunities for field work and/or internships in the management degree options listed above, as well as in the areas of outdoor recreation, water resources management, park and wilderness management, and research planning and administration.

Career and Continuing Education, School of *Patricia A. Book, Dean*

The School of Career and Continuing Education provides general education at the certificate and associate degree levels, as well as vocational/technical training. The school also coordinates the many opportunities for continuing education designed to meet individual, professional and community instructional needs and special interests. The school also offers special services for underprepared students and mature adults returning to college in an evening or weekend setting. SCCE offers certificate and associate degree programs in a variety of fields. The school links university resources to local, community and social development concerns.

Engineering, School of *Vincent S. Haneman, Jr., P.E., Dean*

The School of Engineering offers courses of study leading to the Bachelor of Science degree in civil, electrical or mechanical engineering. The three undergraduate SOE programs are nationally accredited, and because of this accreditation and program emphasis on northern engineering problems and principles, engineering graduates are in demand within and outside the state of Alaska. Building upon required course work in mathematics, chemistry and physics, engineering majors study engineering principles and select an area of specialization and develop skills in creative design and analysis through simulated projects. Computers, from sophisticated PCs to extensive mainframes, are an integral part of the UAF engineering program.

Fisheries and Ocean Sciences, School of *Vera Alexander, Dean*

The School of Fisheries and Ocean Sciences offers the Bachelor of Science degree in fisheries science at the Fairbanks campus and the UAF Juneau Center for Fisheries and Ocean Sciences.* Created in 1987, the school is responsible for coordinating the university's statewide programs involved with education, research, development of applied technology and extension of knowledge to the public concerning Alaska's vast fisheries and marine resources. Majors in the school are well-prepared for graduate study or to enter management, law enforcement and or/public information-education fields related to fisheries and often are able to find summer field work opportunities through cooperating state and federal agencies.

Juneau students should also check the University of Alaska Southeast catalog.

Management, School of *Michael L. Rice, Dean*

School of Management undergraduate programs in economics, accounting and business administration provide the foundation for professional careers in private and public organizations of all sizes. The school's objective is to prepare literate, articulate and broadly educated business specialists who are sensitive to interpersonal relationships and the dignity of the individual. The Bachelor of Business Administration and the Master of Business Administration degree programs are nationally accredited and place UAF among 77 of 1,200 schools across the nation with similar accreditation. All of the degree programs emphasize 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.

Mineral Engineering, School of *Russell J. Ostermann, Acting Dean*

The emphasis of the School of Mineral Engineering is on engineering as it applies to the exploration and development of mineral and energy resources. Petroleum engineering is offered through SME and is the only such program in the state. The geological and mining programs are nationally accredited and the emphasis in all programs is to train undergraduate and graduate students to be tomorrow's leaders in the industry. The school includes two research laboratories, the Mineral Industry Research Laboratory and the Petroleum Development Laboratory, as well as the statewide mining extension program.



Thom B. Le, Karen Nitson and Lucy Hernandez take advantage of the School of Management's new computer laboratory.

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
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 Mining Technology, Cert.
Applied Physics, B.S.
Applied Small Business, A.A.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.

Biochemistry and Molecular Biology, M.S., Ph.D.
Biological Sciences, B.A., B.S., Ph.D.
Biology, M.S., M.A.T.
Botany, M.S.
Business Administration, B.B.A.
- Finance
- Human Resource Management
- International Business Management
- Management Information Systems
- Marketing
- Travel Industry Management

Business Administration, M.B.A.
(see also Applied Small Business)

Chemistry, B.A., B.S., M.A., M.S., M.A.T. M.A.T.
Citizens' Law (minor only)
Civil Engineering, B.S., M.C.E., M.S.
Community Health Practitioner, 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.

Dentistry (Pre-Professional)
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 (X-CED only)

Education, M.Ed.
- Cross-Cultural
- Curriculum and Instruction
- Leadership Development
  - Educational Leadership (Type B Cert.)
- Language and Literacy
- Distance Education

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.
Food Science and Technology (Cooperative)
Foreign Languages, B.A.
- French
- German
- Russian
- Spanish

Forestry (Cooperative)

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.
Human Services Technology, A.A.S.

Interdisciplinary Studies Option, A.A.S., B.A., B.S., B.T., M.A., M.S., Ph.D.

Journalism, B.A.
- Broadcast
- News-Editorial

Justice, B.A.

Law (Pre-Professional)
Library Science (Pre-Professional)
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.
Medical Technology (Cooperative)
Medicine (Pre-Professional)
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., M.A.
Nursing (Cooperative)

Oceanography, M.S., Ph.D.
Office Professions, Cert., 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.

Veterinary Medicine (Pre-Professional)

Wildlife Management, B.S.
- Management Biology
- Research Biology

Wildlife Management, M.S.

Zoology, M.S.

Accounting

School of Management
Department of Accounting and Information Systems

(907) 474-7121

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. *(As part of core, complete PHIL 322-Ethics.)*
2. Complete the following requirements:

ENGL 314 — Technical Writing 3
Upper division Economics elective *(Other than ECON 324 or ECON 350)* 3

3. Complete the Common Body of Knowledge (CBK) (31 credits):

ACCT 101, 102 — Elementary Accounting 6
ACCT 316 — Acct. Information Systems 3
BA 325 — Financial Management 3
BA 330 — Legal Environment of Business 4
BA 343 — Principles of Marketing 3
BA 360 — Production/Operations Management 3
BA 390 — Organizational Theory and Behavior 3
BA 462 — Administrative Policy 3
ECON 324 — Intermediate Macroeconomics
or ECON 350 — Money & Banking 3

4. Complete the following major complex requirements:

ACCT 303 — Governmental Accounting 3
ACCT 310 — Income Tax 3
ACCT 342 — Managerial Cost Accounting 3
ACCT 361, 362 — Intermediate Accounting 6
ACCT 401 — Advanced and International Accounting 3
ACCT 452 — Auditing 3
Complete two of the following:
ACCT 403 — Advanced Taxes 3
ACCT 404 — Advanced Cost Accounting and Controllership 3
ACCT 405 — Contemp. Issues in Accounting 3
ACCT 472 — Computer Control and Adv. Auditing 3
ACCT 473 — Applied Systems Design 3

5. Complete a minor complex (optional) or free electives 12-15
(At least 11 credits must be outside the School of Management with the exception of introductory computer literacy credits. The minor may not be from the School of Management.)

6. 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

(907) 474-5081

Certificate; Degree: A.A.S.
Minimum Requirements for Degree — 64 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 university and A.A.S. requirements: *Credits*
Communications:
ENGL 111X and ENGL 211X, 212*, or 213X 6
SPC 131X or 141X 3
Mathematics or Natural Science:
A math or natural science course at the 100 level or above 3
Humanities, social sciences, mathematics, natural science or Perspectives on the Human Condition 3

2. Complete the following major degree requirements:
Same as Airframe and Powerplant Certificate Program 49
Degree Total 64

*ENGL 212 does not fulfill the second half of the written communication requirement for the baccalaureate degree.

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. A student may request credit by examination for any AFPM class. See the department for details.
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 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

(907) 474-7874

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

(907) 474-7181

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 — *12 Credits*
ANS 101 — Introduction to Alaska Native Studies 3
(Select 3 courses from the following group:
ANL 215 — Eskimo-Aleut Languages 3
ANL 216 — Indian Languages of Alaska 3
ANTH 242 — Native Cultures of Alaska 3
HIST 110 — History of Alaska Natives 3
PS 263 — Alaska Native Politics 3

Core Courses: — *24 Credits*
A. Complete the following required courses (15 credits):
ANS 310 — The Alaska Native Lands Settlement 3
ANS 320 — Language and Culture: Applications to Alaska 3
ANS/ENGL 340 — Contemporary Native American Literature or ANS/ENGL 349 — Narrative Art of Alaska Native Peoples (in translation) 3
ANS 401 — Cultural Knowledge of Native Elders 3
ANS 425 — Federal Indian Law and Alaska Natives or ANS/PS 450 — Comparative Aboriginal Rights and Policies 3

B. Complete 9 credits of the following:

Credits
ANS 120 — Cultural Differences in Institutional Settings 3
ANS 160 — Alaska Native Dance 1
ANS/THR 161 — Introduction to Tuma Theater 3
MUS 223 — Native Alaskan Music 3
ANS 250 — Current Alaska Native Leadership Perspectives 3
ANS 251 — Practicum in Native Cultural Expression 1-3
ANS 300 — Rhetorical Expression of the Alaska Native Experience 3
ANS/RD 315 — Tribal People and Development 3
ANS/PS 325 — Alaska Native Self Government 3
ANS 351 — Practicum in Native Cultural Expression 1-3
ANS 360 — Advanced Alaska Native Dance 1
ANS 361 — Advanced Tuma Theater 3
ANS/ART 365 — Native Arts of Alaska 3
ANS 375 — Native American Religion and Philosophy 3
SOC 408 — American Minority Groups 3
ANS/ED 420 — Alaska Native Education 3
ANS 475 — Alaska Native Social Change 3

MINOR in Alaska Native Studies
A minor requires a minimum of 15 credits in Alaska Native Studies, including ANS 101, ANS 401 and at least 3 credits at the 300 - 400 level. All minor programs must be approved by the Head, Alaska Native studies.

Anthropology

College of Liberal Arts
Department of Anthropology

(907) 474-7288

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:

Required Anthropology Courses: — *Credits*
ANTH 103 — Human Evolution and World Prehistory 3
ANTH 104 — Social/Cultural Anthropology 3

Historical Science:
(Select 6 credits from the following group)
ANTH 211 — Fundamentals of Archeology 3
ANTH 315 — Human Biology 3
ANTH 414 — Environmental Archaeology 3
ANTH 423 — Paleoanthropology 3

Social Science:
(Select 6 credits from the following group)
ANTH 300 — Religion 3
ANTH 306 — Economic Anthropology 3
ANTH 307 — Kinship and Social Organization 3
ANTH 320 — Language and Culture 3
ANTH 410 — History of Social/Cultural Anthropology 3

Area Courses
(Select one 3 credit ethnographic area course and one 3 credit prehistory area course)
ANTH 301 — World Ethnography: region* 3
ANTH 210 — New World Prehistory 3
ANTH 212 — Old World Prehistory 3

Open program electives at 200 level or above 12

*Different geographic regions will be covered each year; e.g. North America, Northern Eurasia, Oceania, etc.

MINOR in Anthropology:
A minor in anthropology requires ANTH 103 and 104, plus 12 additional hours in Anthropology.

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

(907) 451-7223

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 university and A.A.S. requirements:	*Credits*
Communications:	
ENGL 111X and ENGL 211X, 212*, or 213X	6
SPC 131X or 141X	3
Mathematics or Natural Science:	
A math or natural science course at the 100 level or above	3
Humanities, social sciences, mathematics, natural science or Perspectives on the Human Condition	3
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 241 — 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

*ENGL 212 does not fulfill the second half of the written communication requirement for the baccalaureate degree.

Applied Mining Technology

School of Mineral Engineering
Department of Mineral Exploration and Mining Technology

(907) 474-7366

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
HLTH 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

(907) 474-7339

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.

Applied Small Business

College of Rural Alaska
School of Career and Continuing Education

(907) 443-2201
(907) 451-7223

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 Small Business — A.A.S. Degree
1. Complete the following general university and A.A.S. requirements:
Written Communications:
ENGL 111X and ENGL 212X* 6
SPC 131X or 141X 3
Mathematics or Natural Science:
MATH 107, 131X or 161 3
Elective selected from Humanities, Social Science, Mathematics, Natural Science or Perspectives on the Human Condition 3

2. Complete the following major degree requirements:
Accounting Related Courses:
ACCT 101 — Elementary Accounting 3
ACCT 102 — Elementary Accounting
or ABUS 145 — Applied Accounting Issues for Small Businesses 3
Small Business Environment Courses:
ABUS 151 — Village Based Entrepreneurship (College of Rural Alaska students)
or ABUS 154 — Human Relations (School of Career and Continuing Education students) 3
ABUS 272 — Small Business Planning 3
ABUS 273 — Managing a Small Business 3
General Business Courses:
ABUS 241 — Business Law
or BA 331 — Legal Environment of Business 3
BA 151 — Introduction to Business 3
Economics Elective at the 100 level or above 3
OP 221 — Records Management (College of Rural Alaska students) 3
OP 231 — Business Communications (School of Career and Continuing Education students) 3
Area of Specialization 12
(Complete the requirements for one of the three areas of specialization (A, B, or C) as listed below.)

A. Managing Small Corporations:
ABUS 232 — Fundamentals of Management
or BA 301 — Processes of Management 3
ABUS 233 — Financial Management 3
6 credits selected from:
ABUS 179 — Fundamentals of Supervision 3
ABUS 211 — Taxes for Business Entities 3
ABUS 223 — Real Estate Law 3
ABUS 231 — Introduction to Personnel 3
BA 307 — Personnel Management 3
ABUS 250 — Introduction to Managerial Accounting 3
ABUS 299 — Practicum in Applied Business 3
CAPS 150 — Computer Business Applications
or AIS 310 — Introduction to Management Information Systems 3
Other electives may be used with program approval.

B. Tourism:
BA 160 — Tourism Principles and Practices 3
ABUS 255 — Marketing in Tourism 3
6 credits selected from:
ABUS 179 — Fundamentals of Supervision 3
ABUS 211 — Taxes for Business Entities 3
ABUS 231 — Introduction to Personnel 3
BA 307 — Personnel Management 3
ABUS 232 — Fundamentals of Management
or BA 301 — Processes of Management 3
ABUS 233 — Financial Management 3
ABUS 250 — Introduction to Managerial Accounting 3
ABUS 256 — Small Hotel, Bed and Breakfast and Lodge Operations 3
ABUS 299 — Practicum in Applied Business 3
CAPS 150 — Computer Business Applications
or AIS 310 — Introduction to Management Information Systems 3
Other electives may be used with program approval.

C. Retail Merchandising:
ABUS 253 — Principles of Retail 3
ABUS 254 — Principles of Selling 3
6 credits selected from:
ABUS 179 — Fundamentals of Supervision 3
ABUS 211 — Taxes for Business Entities 3
ABUS 231 — Introduction to Personnel 3
BA 307 — Personnel Management 3
ABUS 232 — Fundamentals of Management
or BA 301 — Processes of Management 3
ABUS 250 — Introduction to Managerial Accounting 3
ABUS 299 — Practicum in Applied Business 3
CAPS 150 — Computer Business Applications
or AIS 310 — Introduction to Management Information Systems 3
Other electives may be used with program approval.
Electives 6

3. Minimum credits required 60

*ENGL 212 does not fulfill the second half of the written communication requirement for the baccalaureate degree.

Arctic Engineering

School of Engineering
Department of Civil Engineering

(907) 474-7241

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

(907) 474-7530

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	
or ART 268 — Beginning Native Art Studio	

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.

9 credit minor or specializations for the BFA are painting, drawing, printmaking, sculpture, ceramics, metalsmithing and Native Art.

*HUM 332 or ART 365 may apply toward this requirement.

MINOR in Art:
A minor in Art for the B.A. or B.S. degree is available only to non-art majors and requires 15 credits from at least 3 subject areas in Art.

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

(907) 474-6516

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

College of Rural Alaska
Bristol Bay Campus

(907) 842-5109

Chukchi Campus

(907) 442-3400

Interior Campus

(907) 474-5439

Kuskokwim Campus

(907) 543-4500

Northwest Campus

(907) 443-2201

School of Career and Continuing Education

(907) 451-7223

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

All credit for the A.A. degree must be at the 100-level or above with 20 credits at the 200-level or above, and be distributed as follows:

Communication (9 Credits)	Credits
ENGL 111X — Methods of Written Communication	3
ENGL 211X — Intermediate Exposition with Modes of Literature or *ENGL 212 — Business, Grant and Report Writing or ENGL 213X — Intermediate Exposition	3
SPC 131X — Fundamentals of Oral Communication: Small Group Emphasis or SPC 141X — Fundamentals of Oral Communication: Public Speaking	3

Mathematics or Natural Science (10 Credits)

MATH 131X — Concepts and Contemporary Applications of Mathematics *(or MATH 162, 200, 201, 202, 272 or any math course having one of these as a prerequisite)*	3
One natural science course, with lab, selected from the baccalaureate core	4
Mathematics or natural science elective	3

Humanites and Social Science (18 Credits)

ANTH/SOC 100X — Individual, Society and Culture	3
ECON/PS 100X — Political Economy	3
HIST 100X — Modern World History	3
ART/MUS/THR 200X — Aesthetic Appreciation: Interrelationship of Art, Drama and Music	3
ENGL/FL 200X — World Literatures	3

Humanities or social science elective 3

Two semester-length courses in a single non-English language taken at the university level may substitute for one of the required courses above and the three credit humanities or social science elective.)

Library and Information Skills (0-1 Credit)
Successful completion of library skills competency test or LS 100X or LS 101X substitute for 0-1
(It is strongly recommended that this requirement be completed before enrolling in the 200-level English course requirement or that it be completed concurrently with enrollment in the 200-level English course requirement.)

General Electives (22-23 Credits)
Any combination of courses.= (Students planning to go on to the baccalaureate degree are advised to select courses meeting remaining core requirements and courses designated within baccalaureate majors and minors.)

Electives to total 60

*ENGL 212 does not fulfill the second half of the written communication requirement for the baccalaureate degree.

Athletic Coaching

College of Liberal Arts
Department of Physical Education

(907) 474-7382

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*
PE 411 — History and Philosophy of Sport and Physical Activity 3
PE 412 — Principles and Problems in Athletic Coaching 3
PE 421 — Physiology of Exercise 3
PE 432 — Biomechanics of Human Performance 3
PE 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

(907) 474-7339

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

(907) 474-5081

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. A student may request credit by examination for any AVTY class. See the department for details.

Requirements

Aviation Technology — A.A.S. Degree
1. Complete the following general university and A.A.S. requirements: *Credits*
Communications:
ENGL 111X and ENGL 211X, 212*, or 213X 6
SPC 131X or 141X 3
Mathematics or Natural Science:
A math or natural science course at the 100 level or above 3
Humanities, social sciences, mathematics, natural science or Perspectives on the Human Condition 3
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 116 — Aviation History 3
AVTY 117 — Aviation Weather 3
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 233 — Loran C Navigation 1
AVTY 239 — Aircraft Dispatcher 4
FSCI 117 — Rescue Practices 3
Subtotal 15
4. General Electives 4
Degree Total 60

*ENGL 212 does not fulfill the second half of the written communication requirement for the baccalaureate degree.

MINOR in Aviation Technology
A minor in aviation technology is available to students pursuing a Bachelor of Science or Bachelor of Arts degree. This program will give students an opportunity to become familiar with the field of aviation, with particular emphasis on the use of aviation as a tool and economic process within the Alaskan environment.

Foundation Courses (7 credits)
AVTY 100 — Private Pilot Ground School
or AVTY 111 — Fundamentals of Aviation 3-4
AVTY 117 — Aviation Weather 3

Core Courses (6 credits)
AVTY 231 — Arctic Survival 3
AVTY 305 — Aviation Law 3

Elective Courses
Choose three credits from the following courses:
AVTY 301 — Airworker Strategies 3
AVTY 302 — Aerial Data Collection 2
AVTY 302L— Aerial Data Collection Lab 1
AVTY 402 — Aircraft Management 3
AVTY 405 — Advanced Aircraft Operations 3

Biochemistry and Molecular Biology

College of Natural Sciences
Department of Chemistry

(907) 474-7525

Degrees: M.S., Ph.D.
Minimum Requirements for Degrees: M.S. — 30 additional credits; Ph.D. — open

For complete information on the graduate programs in biochemistry and molecular biology, see the UAF Graduate Catalog.

Biological Sciences

College of Natural Sciences
Department of Biology and Wildlife

(907) 474-7542

Degrees: B.A., B.S., Ph.D.
Minimum Requirements for Degrees: B.A. — 130 credits; B.S. — 130 credits; Ph.D. — open

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:

BIOL 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
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:
Biology Core Requirements: BIOL 105-106, 239, 271, 342, 362, MATH 200 or 272, STAT 200, 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, Marine Science, and/or Space Physics and Atmospheric Sciences. At least 21 credits in Biology 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 is encouraged.
a. For Biology Option complete the following requirements in addition to the biology core requirements: At least one course in physiology (BIOL 210 or 334) 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 biology core requirements: At least one course in: plant structure/function (BIOL 334), zoology (BIOL 222, 305, 317, or 406), plant systematics, evolution and diversity (BIOL 331 or 333), and plant ecology (BIOL 474). Two additional upper division (300-400) level courses in biology (including but not restricted to BIOL 308, BIOL 331, 333, 475, 476, NRM 313, 380, 411, or 451).*
c. For Cell and Molecular Option complete the following requirements in addition ot the biology core requirements: Two of the following three courses (BIOL 361, 418, 442); one of the following two courses (BIOL 445, 452); plus one other 4 unit upper division Biology elective; complete CHEM 324 and 451; complete a sequence of two introductory Physics courses (either PHYS 103X and 104X or 211 and 212).
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, 239, 271, 305, 342, 362.

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.

For complete information on the graduate program in biological sciences, see the UAF Graduate Catalog.

Biology

College of Natural Sciences
Department of Biology and Wildlife

(907) 474-7542

Degrees: M.S., M.A.T.
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

(907) 474-7542

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

(907) 474-7253

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 education in the fields of management, finance, marketing and travel industry management to those individuals interested in entering industry or government upon graduation. The goal 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. BA 151 is an overview and is recommended as an introductory course for persons with a potential interest in a business degree or minor who are either undecided or perhaps unclear about the nature of the various functions performed in the administration of organizations. B.B.A. students must, during their first 30 hours, attain computer literacy by either testing or earning a "C' or better in a basic computer literacy course.

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. *(As part of the core, complete PHIL 322-Ethics.)*

2. Complete the following requirement:

ENGL 314 — Technical Writing 3

3. Complete the Common Body of Knowledge (CBK) (31 credits):

	Credits
ACCT 101 and 102 — Elementary Accounting	6
AIS 310 — Intro. to Management Information Systems or AIS 316 — Accounting Information Systems	3
BA 325 — Financial Management	3
BA 330 — The Legal Environment of Business	3
BA 343 — Principles of Marketing	3
BA 360 — Production/Operations Management	3
BA 390 — Organizational Theory and Behavior	3
BA 462 — Administrative Policy	3
ECON 324 — Inter. Macroeconomics or ECON 350 — Money & Banking	3

4. Complete the following major complex requirements:

	Credits
ACCT 352 — Management Accounting	3
BA 307 — Personnel of Management	3
BA 460 — International Business	3
ECON 321 or 322 — Intermediate Microeconomics/Managerial Economics	3
Option (selected from below)	15

5. Complete a minor complex (optional) or free electives 17-18
(All must be outside the School of Management with the exception of introductory computer literacy credits. The minor may not be from the School of Management.)

OPTIONS: (An option is required for the BBA degree in Business Administration.) *Students are expected to have completed 300 level coursework before enrolling in 400 level option courses.*

Option in Finance:
BA 423 — Investment Management 3
BA 425 — Adv. Corp. Financial Problems 3
BA 430 — Current Topics in Finance 3
BA 461 — International Finance 3
Upper-division electives approved in writing by an option advisor ... 3

Option in Human Resource Management:
BA 317 — Employment Law 3
BA 327 — Collective Bargaining and Labor Relations 3
BA 447 — Compensation Management 3
BA 456 — Small Business Management 3
BA 457 — Training and Management Development 3

Option in International Business:
BA 443 — International Marketing 3
BA 462 — International Finance 3
ECON 463 — International Economics 3
Two academic years of one foreign language* 12-18
(German, Japanese, Russian, Spanish, French)
PS 321 or 322 — International Politics 3
Complete one of the following (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

(*Note: Foreign language credit may also meet humanities general degree requirements.)

Option in Management:
BA 317 — Employment Law 3
BA 327 — Collective Bargaining and Labor Relations 3
BA 425 — Advanced Corporate Financial Problems 3
BA 441 — Promotion Management 3
BA 456 — Small Bus. Management 3

Option in Management Information Systems:
AIS 312 — Information Systems Technology 3
AIS 316 — Accounting Information Systems 3
AIS 410 — Systems Analysis and Design 3
AIS 412 — Systems Administration 3
AIS 414 or CS 425 — Database Management 3
(Under this option for the general BBA requirements, ACCT 342 may be substituted for ACCT 352 and a maximum of 6 credits of accounting may be included in the total free electives.)

Option in Marketing:
BA 436 — Consumer Behavior 3
BA 441 — Promotion Management 3
BA 443 — International Marketing 3
BA 445 — Marketing Research 3
BA 483 — Marketing Management 3

Option in Travel Industry Management:
BA 372 — Hotel Administration 3
BA 375 — Marketing of Hospitality Service 3
BA 377 — Food and Beverage Mgt. 3
BA 378 — Passenger Transportation Mgt. 3
BA 471 — Tourism Seminar 3

6. Minimum credits required 130

MINOR in Business Administration*:
ACCT 102 — Elementary Accounting 3
BA 307 — Personnel Management 3
BA 325 — Financial Management 3
BA 343 — Principles of Marketing 3
Note: Required Prerequisites: Computer Literacy or AIS 101, ACCT 101, BA 151, ECON 200, MATH 161, STAT 201.

Total 16

MINOR in Travel Industry Management*:
ACCT 102 — Elementary Accounting 3
BA 307 — Personnel Management 3
BA 372 — Hotel Administration 3
BA 375 — Marketing of Hospitality Service 3
BA 377 — Food and Beverage Management 3
Note: Required Prerequisites: Computer Literacy or AIS 101, BA 151, BA 343, ACCT 101, ECON 200, MATH 161.

Total 15

*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

(907) 474-7525

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 412 — Instrumental Analytical Methods	3
CHEM 413 — 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 498 — Research	4
*One additional 400 or 600 level chemistry course	3
3. Total Credits Required	130

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 413 — 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

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.

Biochemistry and Molecular Biology — M.S., Ph.D.
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

(907) 474-7609

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
PS 101 — Introduction to American Government and Politics	3

Core Courses:

JUST/PS 250 — History of the Law	3
JUST/PS 303 — Introduction to Legal Processes	3
JUST/PS 330 — Law and Society	3
JUST/PS 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
BA 331 — The Legal Environment of Business	3
BA 332 — Business Law	3
JB 413 — Mass Media Law and Regulation	3
JUST 352 — Criminal Law	3
JUST 354 — Procedural Law	3
PS 302 — Congress and Public Policy	3
PS 322 — International Law and Organization	3
PS 435 — Supreme Court and American Legal System	3
PS 436 — Courts and Civil Liberties	3

Civil Engineering

School of Engineering
Department of Civil Engineering

(907) 474-7241

Degrees: B.S., M.C.E., M.S.
Minimum Requirements for Degrees: B.S. — 135 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 more than 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 111X — Methods of Comm	3
MATH 200 — Calculus	4
ES 101 — Descriptive Geometry for Engineers	2
CHEM 105 — General Chemistry	4
Perspectives on the Human Condition	3

Spring Semester	*17 credits*
SPC 131X or SPC 141X	3
MATH 201 — Calculus	4
CE 112 — Elementary Surveying	3
CHEM 106 — General Chemistry	4
ES 201 — Computer Techniques	3

Second Year

Fall Semester	*17 Credits*
MATH 202 — Calculus	4
PHYS 211 — General Physics	4
ENGL 211X or 213X	3
ES 209 — Statics	3
Perspectives on the Human Condition	3

Spring Semester	*16 credits*
MATH 302 — Differential Equations	3
PHYS 212 — General Physics	4
ES 210 — Dynamics	3
GEOS 261 — General Geology for Engineers	3
Perspectives on the Human Condition	3

Third Year

Fall Semester	*16 credits*
CE 334 — Properties of Materials	3
ES 301 — Engineering Analysis	3
ES 331 — Mechanics of Materials	3
ES 341 — Fluid Mechanics	4
CE 402 — Intro. to Transportation Engineering	3

Spring Semester	*17 credits*
ES 346 — Basic Thermodynamics	3
CE 326 — Intro. to Geotech. Engineering	4
CE 441 — Environ. Engineering	4
CE 431 — Structural Engineering I	3
Perspectives on the Human Condition	3

Fourth Year

Fall Semester	*18 credits*
CE 344 — Water Res. Engr	3
CE 432 — Structural Engineering II	3
ES 307 — Elem. of Electrical Engineering	3
Technical Elective*	3
Technical Elective*	3
Perspectives on the Human Condition	3
CE 400 — EIT Exam (Fall or Spring)	0

Spring Semester	*15 credits*
ESM 450 — Economic Analysis and Operations	3
CE 438 — Design of Engr. Systems	3
Perspectives on the Human Condition	3
Technical Elective*	3
Technical Elective*	3
Technical Elective*	3

*The technical electives must include 12 credits of CE or EQE courses and three credits of approved technical courses. The student should consult his/her advisor. Four out of five electives must be taken from the list of approved CE electives or EQE elective graduate courses. Only one graudate level course may count towad graduation as a technical elective and the student must be within 30 credits of graduation and have at least a 3.0 gpa to enroll.

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/Practitioner

College of Rural Alaska

Coordinator - (907) 474-6085

Alaska Area Native Health Service

(907) 257-1302

Kuskokwim Campus

(907) 543-4541

Norton Sound Health Corporation

(907) 443-3282

Southeast Alaska Regional Health Corporation

(907) 966-2451

Certificate I: Community Health Practitioner; **Certificate II**: Community Health Practitioner Certification; **Degree:** A.A.S

Minimum Requirements for Certificate — 31 credits; for Degree — 60 credits

The Community Health Aide/Practitioner Program is a specialized multiagency paraprofessional health career program in Alaska's 171 rural villages. The mission of this educational program is to prepare Native residents to provide primary health care in remote villages under the supervision of a referral physician. The curriculum includes the knowledge and skills necessary to provide acute care for common medical problems, emergency care, well-child and prenatal care and follow-up for patients with chronic illnesses.

CHA Basic Training consists of three training sessions conducted at a CHAP Training Center, 600 hours of field work experience in the village clinic and a two-week preceptorship conducted by the Regional Health Corporation. Upon successful completion of CHA Basic Training, the Community Health Aide will be titled Community Health Practitioner and is eligible to receive a certificate from the CHAP Training Center and UAF.

After completing the Certificate I level, "certification" is issued by the CHAP Training Center. The "certification" process includes the CHP Statewide Written and Practical Examination and the CHP Field Evaluation by a health professional.

Admission to the Community Health Practitioner Certificate I 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 villages with the concurrence of the Regional Health Corporation.

The CHA curriculum is taught by three Training Centers located in Anchorage, Bethel and Nome. The Seward Training Center currently teaches Session I and Emergency Trauma Training. The formal CHA academic and clinical training is done in three sessions. CHA field experience consists of on-the-job experience during which time the CHA puts into practice the knowledge and skills learned in formal training. The Field Component of training includes a learning contract for each session and the practice and evaluation of CHA skills while working with a variety of health professionslas. A two week preceptorship is provided following Session III.

The Coordinator-Instructor (C-I) or Supervisor-Instructor (S-I) from the Regional Health Corporation, who gives the on-site instruction in the village, is usually a C.H.P., an R.N., or a Midlevel Practitioner. The village physician emphasizes acute care, emergency care, and follow-up of patients with chronic illnesses. The visiting Public Health Nurse emphasizes well-child care, health education, surveillance and promotion. The Maternal Child Health Nurse emphasizes prenatal care and family planning.

The requirements for the CHP Certificate, CHP Certification, and the CHP A.A.S. Degree are kept uniform throughout the state by the UAF CHAP Academic Review Committe which is advisory to the Dean of the College of Rural Alaska, the CHAP Training Centers and the Community Health Aide Program Directors in the Regional Native

Health Corporations. The CHAP Directors and C-I's/S-I's in the Regional Native Health Corporations assist the CHA in meeting these requirements.

Requirements

Community Health Practitioner — Certificate I

Prior to admission to the Certificate level curriculum, Community Health Aide Presession I 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 CHP Certificate level or basic training courses equal 31-33 hours of UAF credit. Community Health Aide (CHA) training consists of the following courses:

	Credits
CHP 082 — CHA Presession I (optional)	2
EMTT 103 — Emergency Trauma Training First Responder	3
or EMTT 119 — Emergency Medical Technician I	4
CHP 120 — CHA Session I	4
CHP 121 — CHA Session II	4
CHP 122 — CHA Session III	4
CHP 123 — CHA Field Work Experience	14
CHP 124 — CHA Preceptorship	2
Total	31-33

Currently the requirements for the CHP Certificate, meaning completion of the curriculum, are provided as follows:

CHAP Training Center

1. Emergency Trauma Training First Responder (Training Center or Field).

2. Sessions I, II and III.

Regional Health Corporations

1. 600 hours of field work experience.
2. CHA learning reinforcement and evaluation following each session in which the CHA Skills List and learning contracts are completed.
3. A two week preceptorship consisting of at least 30 hours of supervised clinical experience.
4. CHA Skills List.

Community Health Practitioner — Certificate II

Requirements for CHP "certification", meaning competency to practice, are:
1. A CHP Certificate I from an approved CHAP Training Center.
2. Statewide written and practical CHP certification examination score of 80% or higher.
3. Satisfactory field evaluation by th C-I/S-I of the CHA's job performance in the village clinic.

Completion of the academic and field components of the CHP Certificate Program currently requires 30-36 months. All of these credits may be applied to the CHP Associate of Applied Science Degree.

Currently, the Training Centers in Anchorage, Bethel, Nome, and Sitka provide CHP certification.

Community Health Practitioner — A.A.S. Degree

The curriculum for this program is built upon the Community Health Practitioner Certificate I Program and the Associate of Applied Science Degree requirements. Completion of the CHP Certificate I Program is an entrance requirement for the Community Health Practitioner Associate of Applied Science Degree Program.

Because Community Health Practitioners are employed in rural communities, a special office has been created within the College of Rural Alaska to service their needs. UAF employs a CHAP Academic Coordinator to represent this program within the university and to relate to the many agencies involved in this training throughout the state.

The Alaska Area Native Health Service and the Regional Native Health Corporations may, with university approval, offer health related courses for credit. The Community Health Practitioners entering the degree program may take courses from any of the units within the university, including distance'education.

Community Health Practitioner — A.A.S. Degree

1. Complete the following general university and A.A.S. requirements:	Credits
Communications:	
ENGL 111X and ENGL 211X, 212*, or 213X	6
SPC 131X or 141X	3
Mathematics or Natural Science:	
A math or natural science course at the 100 level or above	3
Humanities, social sciences, mathematics, natural science or Perspectives on the Human Condition	3
2. Major Specialty Requirements:	Credits
EMTT 103 — Emergency Trauma Training First Responder	3
CHP 120 — CHA Session I	4
CHP 121 — CHA Session II	4
CHP 122 — CHA Session III	4
CHP 123 — CHA Field Work Experience	14
CHP 124 — CHA Preceptorship	2

Select six credits from the CHP Advanced courses listed below:

CHP 202 — Emerg Care for Community Health Practitioners	1-3
CHP 203 — Clinical Update for Community Health Practitioners	1-3
CHP 206 — Mental Health/Substance Abuse	1-3
CHP 207 — Maternal and Infant Health	1-3
CHP 208 — Communicable Disease	1-3
CHP 211 — Health Education	1-3
3. Electives	8
Total Credits	60

*ENGL 212 does not fulfill the second half of the written communication requirement for the baccalaureate degree.

Credits awarded with the CHP Certificate may be used as the applied studies requirement in the Associate of Arts (A.A.) degree. For students interested in becoming primary health care professionals, two years of clinical experience are needed as a CHA for application to the University of Washington Medex Northwest Physician Assistant Program.

Community Psychology

College of Rural Alaska
Department of Behavioral Sciences and Human Services

(907) 474-7240

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

(907) 451-7223

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

(907) 474-7253

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
BA 101 — Introduction to Management Information Systems	3
BA 201 — COBOL or	
CS 201 Computer Programming	3
BA 220 — Basic Programming Languages or	
CS 202 Computer Programming	3
BA 310 — Management Information Systems	3
ACCT 316 — Accounting Information Systems	3
Total	21

Computer Science

College of Liberal Arts
Department of Mathematical Sciences

(907) 474-7332

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 307 — Discrete Mathematical Structures	3
STAT 300 — Statistics	3
One of the following:	
MATH 302 — Differential Equations	3
MATH 308 — Abstract Algebra	3
MATH 310 — Numerical Analysis	3
MATH 314 — Linear Algebra	3
MATH 371 — Probability	3
MATH 408 — Mathematical Statistics	3
MATH 460 — Mathematical Modeling	3
3. Complete the following major requirements:	
CS 201 — Computer Programming I	3
CS 202 — Computer Programming II	3
CS 301 — Assembly Language Programming	3
CS 311 — Data Structures and Algorithms	3
CS 321 — Operating Systems	3
CS 331 — Programming Languages	3
CS 402 — Senior Project and Professional Practice	3
CS 411 — Analysis of Algorithms or CS 451 — Automata and Formal Languages	3
EE 341 — Computer Organization I	4
EE 342 — Computer Organization II	4
Upper Division electives: either CS courses or approved electives such as BA 310, EE 443, EE 454	9
4. Total Credits Required	120

MINOR in Computer Science

CS 201 — Computer Programming I	3
CS 202 — Computer Programming II	3
Three upper division elective courses from CS, EE 341, BA 310, MATH 310, MATH 460 or approved by CS advisor	9

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 Computer Science 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.

Cross-Cultural Communications

College of Liberal Arts
Cross-Cultural Communications Program

(907) 474-7623

Cross-cultural communications is an innovative program designed to serve the needs of Alaska Native and rural students at UAF. Recognizing that the transition to university communication patterns presents challenges which vary in type as well as degree, depending on a student's cultural background, CCC offers several courses designed to capitalize on the similarities of experience brought to the University of Alaska Native and rural students. It aims to enable such students to make the transition more quickly than might otherwise be the case.

CCC courses which are not listed under Cross-Cultural Communications designators may be found under Developmental Studies, English and Mathematics, where they can be recognized by -CC# and -CCC section "numbers."

Culinary Arts

School of Career and Continuing Education
Service Industry Department

(907) 474-5074

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

Culinary Arts — A.A.S. Degree

1. Complete the following general university and A.A.S. requirements:	Credits
Communications:	
ENGL 111X and ENGL 211X, 212*, or 213X	6
SPC 131X or 141X	3
Mathematics or Natural Science:	
A math or natural science course at the 100 level or above	3
Humanities, social sciences, mathematics, natural science or Perspectives on the Human Condition	3
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 II	4
CAH 243 — Food Production III	4
CAH 247 — Bakery Production II	4
CAH 248 — Bakery Production III	4
CAH 250 — Garde Manger	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 171 — Gourmet Baking 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

*ENGL 212 does not fulfill the second half of the written communication requirement for the baccalaureate degree.

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

Dentistry

Pre-Professional Program

(907) 474-6396

Dentistry concerns itself with the prevention, diagnosis and treatment of oral disease and disorders. Professional dental study typically involves a four-year program of graduate study combining classroom instruction, lab work, and hands-on patient treatment. Students can also go on to specialize within the dental field by pursuing advanced training at the post-doctoral level. Both specialists and general dentists are required to be state licensed before practicing.

While a definitive pre-dentistry curriculum is not required for admission into dental school, it is recommended that students include specific courses as part of their undergraduate studies. At UAF, these courses are chemistry (CHEM 103X and 104X or 105X and 106X), organic chemistry (CHEM 321 and 322), biology (BIOL 105X and 106X), anatomy and physiology (BIOL 111 and 112), and physics (PHYS 103X and 104X). Dental schools also expect students to have a broad general background in the social sciences and humanities. While some dental schools will accept students after they have completed three years of undergraduate work, the majority of students entering dental school have already completed a bachelor's degree. A strong academic record at the undergraduate level, as well as high scores on the Dental Admission Test (DAT), are desirable for admission.

Students whose career goal is dentistry, or who are considering this career choice, should contact the Academic Advising Center to be assigned an academic advisor. Program advisement, exploration of professional schools and licensing requirements, and financial planning are available to meet the needs of students in fulfilling their career aspirations.

Diesel & Heavy Equipment Mechanics

School of Career and Continuing Education
Trade and Industry Department

(907) 474-5082

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 16 students to encourage instructor-student interaction and allow for individualized assistance. *An applied math proficiency exam must be passed to complete certificate requirements.* A student may request credit by examination for any DSLT or MECN class. See the department for details.

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

(907) 474-5264

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. A student may request credit by examination for any DRT class. See the department for details.

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

(907) 474-5240

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 university and A.A.S. requirements:	*Credits*
Communications:	
ENGL 111X and ENGL 211X, 212*, or 213X	6
SPC 131X or 141X	3
Mathematics or Natural Science:	
A math or natural science course at the 100 level or above	3
PSY 101 — Introduction to Psychology	3
2. Complete the following major degree requirements:	*Credits*
ECHD/PSY 245 —Child Development	3
ECHD 100 — Introduction to Early Childhood	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 — Infant/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
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.

*ENGL 212 does not fulfill the second half of the written communication requirement for the baccalaureate degree.

Early Childhood Development — Certificate

1. Complete the following required courses	*Credits*
ENGL 111X — 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 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	25
2. Complete 5 credits of general electives	5
Certificate Total	30

Early Childhood Education

College of Rural Alaska
Interior Campus

(907) 474-5208

Kuskokwim Campus

(907) 543-4500

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 university and A.A.S. requirements:	*Credits*
Communications:	
ENGL 111X and ENGL 211X, 212*, or 213X	6
SPC 131X or 141X	3
Mathematics or Natural Science:	
A math or natural science course at the 100 level or above	3
Humanities, social sciences, mathematics, natural science or Perspectives on the Human Condition	3
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.

*ENGL 212 does not fulfill the second half of the written communication requirement for the baccalaureate degree.

Earth Science

College of Natural Sciences
Department of Geology and Geophysics

(907) 474-7565

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 CHEM 103X and 104X or PHYS 103X and 104X
   - 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 core and B.A. 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): NRM 101, 310, 380, 400, 401, 430; BIOL 103 or 105-106, 271; GEOG 301, 492; GEOS 213, 214, 304, 401, 408, 422; MIN 202; PETE 103; GE 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

(907) 474-7119

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. *(Complete MATH 162 to meet the mathematics requirement for the core.)*
2. Complete the following program requirements:

Foundation courses that meet B.A. degree requirements:

	Credits
ECON 200 — Principles of Economics	4
MATH 161 — Algebra for Business and Economics	3
Political Science elective	3
Other foundation courses:	
ACCT 101 — Elementary Accounting	3
STAT 200 — Elementary Statistics	3
Complete 30 additional credits in Economics including: ECON 227 — Intermediate Statistics for Economics and Business	3
ECON 321 — Intermediate Microeconomics	3
ECON 324 — Intermediate Macroeconomics	3
ECON 463 — International Economics	3
Economics electives	18

(Must be 300-level or higher. 6 credits of the following courses may be included: BA 325, 343, 360, 423, 461. At least 6 credits of electives must be in courses designated as writing intensive (W) courses.)

3. Minimum credits required 120

Economics — B.B.A. Degree

1. Complete the general university and B.B.A degree requirements.
2. Complete the following Common Body of Knowledge (CBK) (31 credits):

ACCT 101 and 102 — Elementary Accounting	6
AIS 310 — Intro. to Management Information Systems or AIS 316 — Accounting Information Systems	3
BA 325 — Financial Management	3
BA 330 — Legal Environment of Business	3
BA 343 — Principles of Marketing	3
BA 360 — Operations Management	3
BA 390 — Organizational Behavior	3
BA 462 — Administrative Policy	3
ECON 324 — Intermediate Macroeconomics or ECON 350 — Money and Banking	3

3. Complete the following major complex requirements:

Political Science elective	3
ECON 321 — Intermediate Microeconomics	3
ECON 324 — Intermediate Macroeconomics (if not taken in CBK)	3
ECON 463 — International Economics	3
Economics electives	15-18

(Only 15 credits of economics electives are required if ECON 350 is taken as part of the CBK. At least 6 credits must be taken in courses designated as writing intensive courses.)

4. Complete a minor complex (optional) or free electives 20-21

(At least 10 credits must be outside the School of Management with the exception of introductory computer literacy credits. The minor may not be from the School of Management.)

5. Minimum credits required 130

Economics Major Requirements	*27 Credits*
A. General Requirements	
PS 102 (only if PS 101 is also taken), PS 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 200 — Principles of Economics	4
12 credits in approved economics courses at the 300 level or above	12
Total	*16*

Education

College of Rural Alaska
Department of Education

(907) 474-7341

Degrees: B.Ed., M.Ed., Ed.S.

Minimum Requirements for Degrees: B.Ed. — minimum of 130 credits; M.Ed. — minimum of 36 additional credits, Ed.S. — 36 credits beyond master's degree and 60 credits beyond baccalaureate; Post Baccalaureate: Elementary certification — minimum of 45 credits; Secondary certification and k-12 certification — minimum of 33 credits.

I. Certification and Accreditation Information

Teaching certificates are issued by the Alaska Department of Education. Students who successfully complete a UAF Education program including student teaching will meet the current academic requirements for Alaska certification. Students interested in teaching in a state other than Alaska should consult the certification department for that state to obtain specific certification requirements.

All UAF education programs are accredited by the National Council for Accreditation of Teacher Education (NCATE), and follow the standards for NCATE review. These programs are also approved by the State of Alaska Department of Education.

Students may contact the Office of Certification and Advising in the UAF Department of Education for additional information and support.

II. Admission to Teacher Education

In addition to being accepted by the University, all students wishing to be certified must also formally apply for admission to the Fairbanks elementary education program or secondary Teachers for Alaska program offered on the Fairbanks campus, or the Cross Cultural Education Development (X-CED) elementary or secondary education program offered on the rural campuses. Admission requirements for these programs may be found on the following pages.

Continuation in these programs is based upon the maintenance of satisfactory performance in all areas of the program. A student who fails student teaching will be exited from the program, and further involvement is dependent upon a re-application process. See the Coordinator of the Office of Clinical Practices regarding this procedure.

III. Education Programs

Education programs at the University of Alaska Fairbanks have the responsibility for preparing highly qualified professionals in education who are prepared to teach in both urban and rural Alaska, and to work with multicultural and minority students, especially Alaska Native students.

These education programs are offered through two delivery systems: resident programs at the Fairbanks campus, and distance-delivery programs through the Cross Cultural Education Development Program (X-CED) at the following rural campus areas: Barrow (Arctic Sivunmun Ilisagvik), Bethel (Kuskokwim), Dillingham (Bristol Bay), Interior Campus, Kotzebue (Chukchi), and Nome (Northwest).

A. Fairbanks Campus Resident Program:

Offered at the Fairbanks campus are resident programs leading to both elementary and secondary teaching certificates. These programs are designed for full-time students, although part-time students are accommodated when possible. The professional year, the last year in the program, is an intensive compressed integrated curriculum that incorporates university classwork with practicum experiences and culminates in student teaching. It requires a full-time commitment since students are placed in the school for methods' practicum experiences and student teaching.

Available at the Fairbanks campus are a Bachelor of Education degree program in elementary education, an elementary education minor with certification, an elementary education minor without certification, a general education minor, a post-baccalaureate elementary education program (a minimum of the elementary minor), and a secondary and K-12 certification program (the Teachers for Alaska Program). A Bachelors of Education degree in secondary education is no longer available at the Fairbanks campus. A student wishing to be certified for secondary teaching must complete the bachelor's degree requirements, including all requirements for a certifiable major, before entering the Teachers for Alaska program.

B. Rural Campuses Cross-Cultural Education Development Program (X-CED)

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. The X-CED program offers full-time undergraduate course work in education for students seeking a B.Ed. degree in either elementary or secondary education. 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 XCED 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 Program Head, X-CED, Center for Cross-Regional Education Programs, Department of Education, Fairbanks campus.

IV. Elementary Education Programs

To be recommended for an elementary teaching certificate, a student must complete the requirements of one of the following three options: 1) B.Ed. in Elementary Education, 2) Minor in Elementary Education with certification, or 3) Post-Baccalaureate Certification in Elementary Education. All three options are available both at the Fairbanks campus and through the X-CED program.

Students admitted to either the Fairbanks Teacher Education program or the X-CED program may transfer between programs without re-applying for admission. However, it is important to note that the programs have different requirements, placement procedures, and timetables. The Office of Certification and Advising will assist transferring students.

Students graduating under earlier catalog requirements will substitute ED 410, 411, 412, and 413 for the past required courses Ed 381, 419 and 421.

Program Requirements

B.Ed. Degree (Minimum Credits — 130)
1. Complete university core requirements.
2. Complete the following degree and program (major) requirements:

	Credits
A. Humanities(9 credits)	
LING 101 — Nature of Language	3
Electives	6
B. Social Sciences(9 credits)	
ANTH 242 — Native Cultures of Alaska	3
PSY 101 — Introduction to Psychology	3
PSY 240 — Devel. Psychology in Cultural Perspective	3
C. Mathematics(6 credits)	
MATH 205 — Math. for Elementary School Teachers I	3
MATH 206 — Math. for Elementary School Teachers II	3
D. Complete one of the concentrations listed below:	
Each concentration must have a minimum of 12 upper division credits. Core requirements (except Communication requirements) may be counted toward these concentrations.	
1. Humanities (30 credits)	
At least 12 credits concentrated in Art, English, or Music	
2. Social Science (30 credits)	
At least 12 credits concentrated in one discipline	
3. Mathematics and/or Science (29 credits)	
At least 12 credits concentrated in one discipline	
4. ESL/Applied Linguistics (21 credits)	
ENGL 318 — Modern English Grammar	3
ENGL 462 — Applied English Linguistics	3
ANS 320 — Language and Ethnicity	3
Credits in a language	6
Approved linguistics courses	6
5. Alaska Native Language/Bilingual (25-27 credits)	
Credits in one Alaska Native language	16-18
ANL 387-388 — Bilingual Methods and Materials	
ANL 215 or 216 — Alaska Native Languages	3
6. Early Childhood Development (18 credits)	
12 credits of approved Early Childhood Development courses plus 6 upper division credits from one of the following:	
Art — Physical Education	
English — Speech	
Music — Theater	
E. Education - complete the following:	
Foundation/Theory Courses	
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 (ED 345, 346, 380, 450, 422, or ANS 420)	3
Physical Education Elective (PE 316, 317 or 327)	3
ED 304 — Literature for Children	3
Art Education Elective (ED 309, 310)	3
Methods Block Courses	
ED 410 — Foundations of Literacy Development	3
ED 411 — Strat. for Reading/Writing Instr. in Multicult. Classrooms	3

ED 412 — Lang. Arts and Social Studies: Methods and Curric. Dev ... 3
ED 413 — Math. and Science: Methods and Curric. Dev. 3
Student Teaching
ED 452 — Elementary Student Teaching 12
(Candidates who have successfully taught full-time in self-contained elementary classrooms may request a reduced student teaching experience. Contact the Office of Clinical Practices for further information.)
Minimum credits required 130

MINOR in Education — With or Without Teacher Credential Endorsement

Majors in other departments who wish to obtain an Elementary Certificate should contact the UAF Department of Education to obtain course requirements and application procedures for admission to the Teacher Education Program. Students must have completed the necessary prerequisites and have been admitted to the Teacher Education Program prior to acceptance for placement in methods courses and student teaching. *Students may have a minor in education without student teaching, but they must complete student teaching if they wish to meet certification requirements for teaching.*

MINOR in Elementary Education (WITH credential endorsement):

Credits

Foundation/Theory Courses
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
Education Foundation Elective (ED 345, 346, 350, 380, 422, or ANS 420) 3
Methods Block Courses*
ED 410 — Foundations of Literacy Development 3
ED 411 — Strat. for Reading/Writing Instr. in Multicult. Classrooms 3
ED 412 — Lang. Arts and Social Studies: Methods and Curric. Dev ... 3
ED 413 — Math. and Science: Methods and Curric. Dev. 3
Student Teaching
ED 452 — Elementary Student Teaching 12

* A minimum of 6 credits of math, including MATH 205, is required for admission to methods.

MINOR in Elementary Education (WITHOUT credential endorsement):

Complete the Elementary Education minor requirements excluding ED 452 — Elementary Student Teaching.



Teresa John tells Teachers for Alaska students about her experiences as a student in rural Alaska.

Post-Baccalaureate Elementary Certification Program:
Post-baccalaureate students who wish to obtain an Elementary Certificate should contact the UAF Department of Education to obtain course requirements and application procedures for admission to the Teacher Education Program. Students must have completed the necessary prerequisites and have been admitted to the Teacher Education Program prior to acceptance for placement in methods courses and student teaching.

Course requirements are the same as those for Elementary Education Minor with Certification.

Admission Requirements
The Elementary Education Program is a selective teacher education program. In order to obtain an elementary teaching certificate, all students (B.Ed. majors, elementary education minors, and post-baccalaureate) must not only complete one of the three above options, they also must apply and be admitted to the Elementary Teacher Education Program. *Admission to UAF as a degree student majoring in education does not automatically qualify a student for admission to the Elementary Teacher Education Program.* Admission to the program is based on a comprehensive system that includes more than one measure and is used by the education faculty to assess the personal characteristics, communications, and basic skills proficiency of candidates preparing to teach.

Once in the program, there is ongoing professional assessment with two formal reviews which monitor the progress of elementary education students from admission through completion of their professional education program. One review is prior to entry to the professional year (which begins with the methods block), and one prior to entry to student teaching. These reviews include an evaluation of grades, observations, faculty recommendations, demonstrated competence in academic work, and recommendations from the appropriate professionals in the schools. Consistent procedures and relevant criteria are used to determine eligibility for student teaching. Systematic approaches are used to assist education students who are making unsatisfactory progress in this program. Specific admission procedures and criteria for each of these three steps for the Fairbanks and X-CED programs are described in the following sections.

Fairbanks Campus Program
1. Admission to elementary education program (B.Ed. major, elementary education minor, and certification)
In order to be considered for admission to the elementary education program, students must:
A. Submit a complete application, including all required transcripts and references, in accordance with deadlines.
B. Complete a minimum of 45 semester credits, (up to 30 transfer credits may be used).
C. Students will be chosen for the program based on the following multiple measures which will be weighed and assessed by various means, including but not limited to faculty rating forms, letters of reference, university transcripts, writing samples, and evaluations from University-sponsored practicum placements. The range and balance in these four areas will be considered in a review by the faculty. Questions faculty will ask in this review include: does the student have:
   1) a solid academic background (a minimum cumulative GPA of 2.7),
   2) interpersonal, intercultural, and communication skills,
   3) successful experience in one or more of the following contexts:
      a. pre-school or public school classrooms,
      b. other settings with children,
      c. rural Alaska,
      d. culturally diverse settings, and
   4) practical skills and life experiences

2. Review criteria for entry to elementary education professional year (methods block and student teaching)
A. Acceptance to the elementary education program.
B. Placement information form on file with Elementary Education Office by October 1 to begin the professional year during the spring semester or by February 15 to begin the professional year during the fall semester. Students are admitted for a specific semester, and must reapply if their schedule changes.
C. Completion of 90 credits leading to a bachelor's degree.
D. Completion of all required education courses (except ED 410, 411, 412, and 413) and all required math courses, with a minimum grade of "C" in education and math courses and a minimum cumulative GPA of 2.7.
E. Approval of Elementary Education Committee to enter the professional year.
A maximum of 15 credits per semester is recommended while enrolled in the professional year.

3. Review criteria for entry to elementary education student teaching
A. Successful completion of Methods Block.
B. Placement information for student teaching on file with the Office of Clinical Practices by October 1 for student teaching in the spring semester or by February 15 for student teaching in the fall semester.
C. A completed physical examination.
D. Approval of faculty to enter student teaching.

Students who feel they have experience comparable to student teaching may petition to have the requirement reduced or waived. See the Coordinator of the Office of Clinical Practices regarding this procedure.

Rural placements for student teaching are also available. Contact the Office of Clinical Practices for further information.

X-CED Program
1. Admission to elementary education program (B.Ed. major, elementary education minor, and certification)
In order to be considered for admission to the elementary education program, students must:
A. Submit a complete application, including all required transcripts and references, in accordance with deadlines.
B. Complete a minimum of 45 semester credits with a minimum GPA of 2.5
C. Document the following:
   1) Evidence of long term commitment to the region.
   2) Evidence of academic ability.
   3) Familiarity with local Native language and culture.
   4) Demonstrated interest and potential for success in field.
   5) Professional qualities indicating successful working relationship with others.

2. Review criteria for entry to elementary professional year and student teaching

Contact X-CED Program for specific requirements

V. Secondary Education Programs

To be recommended for a secondary teaching certificate, a student must complete the requirements of one of the following three options: 1) B.Ed. in Secondary Education (X-CED Program, distance delivery only), 2) Secondary Certification: X-CED Program (distance delivery only), or 3) Secondary Certification: Teachers for Alaska Program (Fairbanks campus only).

Admission procedures and criteria for admission to the X-CED secondary education program are the same as those for the X-CED elementary education program. Admission procedures and criteria for admission to Fairbanks' Teachers for Alaska Program are discussed below.

Program Requirements

Fairbanks Campus Secondary Certification Program: Teachers for Alaska (TFA) Program
The Teachers for Alaska Program (TFA) is a professional certification program which prepares highly qualified teachers for secondary school positions. The program is especially designed for students 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 (7-12) certification in a certifiable subject area, and 2) K-12 small schools certification in a certifiable subject area. It is an extended two-semester program which students begin before the start of one academic semester, and complete after the end of the following academic semester. For further information on the program, please contact he Coordinator of the UAF Office of Certification and Advising.

Admission Requirements
1. Applicants for the TFA program must meet credit requirements for certification in a specific subject area as approved by the Alaska Department of Education. Eligible applicants include 1) UAF undergraduates who will have completed bachelor's degree requirements for an Alaska State Department of education certifiable subject area by the start of the first semester of the TFA program; and 2) post-baccalaureate students who already possess a bachelor degree in a certifiable subject area. Certifiable subject areas are: Alaska Native Languages, Anthropology, Art, Biological Science, Chemistry, English, Foreign Languages, General Science, Geography, History, Mathematics, Music, Physical Education, Physics, Political Science, Speech Communication, Theatre Arts, Language Arts/Humanities (interdisciplinary), Social Science (interdisciplinary), or Math/Science (interdisciplinary). The Office of Certification and Advising will evaluate past degrees to determine eligibility.

2. Acceptance to TFA is contingent upon acceptance into the University of Alaska Fairbanks and completion of a TFA application form obtained from the Education department.
3. For the 1991-92 academic year, all application materials, including transcripts and letters of reference, must be received by **February 15** in order to be reviewed for admission in the following fall semester, and by **October 1** in order to be reviewed for admission in the following spring semester.
4. Teachers for Alaska is a selective teacher education program. A comprehensive system that includes more than one measure is used to assess the personal characteristics, communication, and basic skills proficiency of candidates preparing to teach. This system includes, but is not limited to, the following multiple measures which will be weighed and assessed by various means, including a review of transcripts, essays and/or writing proficiency exams, and letters of reference. Faculty may also require interviews. The range and balance of these four areas will be considered in a review by the faculty. Questions the faculty will ask in making admissions decisions include: does the student have:
   a) a diverse, solid academic background (GPA of 2.7 or higher),
   b) interpersonal, intercultural, and communication skills,
   c) successful experience in one or more of the following contexts:
      1) public school classrooms,
      2) other settings with students,
      3) rural students,
      4) culturally diverse settings, and
   d) practical skills and life experiences
5. Once accepted into the program, TFA has a systematic procedure for monitoring the progress of education students from admission through completion of their professional education program to determine if they should continue in the program, be advanced to student teaching, or be recommended for a teaching certificate. In assessing student progress, faculty review the following information, including grades, observations, faculty recommendations, demonstrated academic competence, and recommendations from the appropriate professionals in the schools. Systematic approaches are used to assist education students who are making unsatisfactory progress in their programs.
6. Reciprocity will be maintained with rural campuses programs. X-CED students wishing to complete their professional year on the Fairbanks campus must send intent to enroll information to the Office of Certification and Advising. Please contact your advisor and the Coordinator for the Office of Certification and Advising for further information.

Course Requirements: TFA Secondary Subject Area Endorsement

	Credits
1. First Block (15 credits):	
ED 582 — Teaching as Reflective Inquiry	4
ED 583 — Teaching as Decision Making and Invention	8
ED 584 — Practicum: Teaching in Small and Large Schools	3
2. Second Block (18 credits):	
ED 585 — Reflective Inquiry into Multicultural Classrooms and Communities (Formerly ED 619)	3
ED 586 — Designing Learning Environments (Formerly ED 692)	3
ED 453 — Student Teaching	12

Additional Requirements for TFA K-12 Small Schools Certificate:

1. Same as above except ED 453, plus:	
2. ED 454 — Student Teaching K-12 (This is an 18 week student teaching experience.)	12
3. Complete the following 6 credits:	
ED 411 (language arts), ED 412 (social studies) or ED 413 (math/science), depending on your area of specialization	3
ED 410 — Foundations of Literacy Development	3

Transition Policy

Students graduating under earlier catalog requirements will substitute ED 582, 583 and 584 for the past required courses ED 402, 407, 424/425 and 430. For these students only, these courses, together with ED 453, 585 and 586, will constitute a minor in secondary education leading to certification. Physical Education and Music students seeking a teaching credential should contact their department for information on required education courses.

Minor in General Education

For those students interested in exploring the possibility of a career in education before beginning the elementary education professional year or the TFA program, and for those students who are interested in education but who may not wish to pursue certification, there is the option of completing a minor in general education that is not linked to certification or admission to either education program. Students may also elect to take one or more of the following courses according to their own personal interests. The minor consists of the following courses:

	Credits
ED 201 — Introduction to Education	3
ED 299 — Practicum in Education	3
ED 350 — Communication in Cross-Cultural Classrooms	3
Two approved education electives	6
PSY 240 — Devel. Psych. in Cross Cultural Perspective	3

B.Ed. Degree (Minimum Credits — 130) (X-CED Program)

1. Complete university core requirements.
2. Complete the following degree and program (major) requirements:

	Credits
A. Humanities(9 credits)	
LING 101 — Nature of Language	3
Humanities Electives	6
B. Social Sciences(9 credits)	
ANTH 242 — Native Cultures of Alaska	3
PSY 101 — Introduction to Psychology	3
PSY 240 — Devel. Psychology in Cultural Perspective	3
C. Mathematics(6 credits)	
Math Electives	6
D. Complete one of the 3 interdisciplinary major/minors listed below: Each major/minor must have a minimum of 12 upper division credits.	
1. Language Arts/Humanities (48 credits)	
Core English requirements	6
Core Humanities requirements	6
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	3
2. Social Sciences (48 credits)	
Core Social Science requirements	9
History Electives (Recommended: HIST 101-102 — Western Civilization, HIST 131-132 — History of the U.S.)	3
Anthropology Electives (Recommended: ANTH 200 — Social/Cultural Anth., ANTH 242 — Native Cultures of Alaska)	6
Political Science Electives (Recommended: PS 101 — Intro. to Amer. Govt. and Politics, PS 263 — Alaska Native Politics)	6
Geography Electives (Recommended: GEOG 101 — Intro. Geography or GEOG 103 — World Economic Geog.	6
Economics Electives (Recommended: ECON 202 — Princ. of Econ. I, ECON 201 — Princ. of Econ. II, or ECON 137 — The Alaskan Economy, or ECON 235 — Intro. to Natural Resources Econonics	6
Upper Division Social Science Electives Selected from the following areas (minimum of 9 credits in one area): History, Anthropology, Sociology, Geography, Political Science, Economics.	12
3. Math/Science (45 credits)	
Core Math requirements	3
HUM 202 — Unity in the Sciences	3
Math Electives (minimum 6 credits upper division)	12
Core Science requirements	8
Science Electives (minimum 6 credits upper division) A minimum of 6 credits from each of the following fields: Biology, Chemistry, Physics, Geoscience.	19
E. Education - Complete the following:	
Foundation/Theory Courses	
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 (ED 345, 346, 380, 450, 422, or ANS 420)	3
Approved Health/Nutrition Elective (HMSV 206, EMTT 109, PE 246, ECHD 120, HLTH 203)	3
Methods Block Courses	
ED 407 — Reading Strategies 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 the Secondary School or approved substitute	3
ED 430 — Multicultural Teaching Techniques	3
Student Teaching	
ED 453 — Secondary Student Teaching (Candidates who have successfully taught full-time in secondary schools may request a reduced student teaching experience. Contact the Office of Clinical Practices for further information.)	12
Minimum credits required	130

X-CED Secondary Certification Program

Credits

(For non-Fairbanks campus students who already hold a baccalaureate degree in a certifiable teaching subject area.)

Foundation/Theory Courses

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
Education Foundation Elective (ED 345, 346, 350, 380, 450, or ANS 420) 3

Methods Courses*

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

Student Teaching

ED 453 — Secondary Student Teaching 12
(Candidates who have successfully taught full-time in secondary schools may request a reduced student teaching experience. Contact the Office of Clinical Practices for further information.)
Minimum credits required 130

International Exchange Programs

The College of Rural Alaska offers two international exchange programs, one with the Soviet Union and one with Japan. Both programs offer students an excellent opportunity to study and teach abroad. The Soviet Exchange Program is with Magadan State Pedagogical Institute, and allows a short term exchange (3 to 4 weeks) and a long term exchange (one semester or one academic year). The Japan Exchange Program is with Hokkaido University of Education in Sapporo, Japan. During the one month exchange, UAF students who have completed student teaching will complete a three-week teaching internship in Japanese schools and participate in an orientation and program debriefing at Hokkaido University. Students interested in these programs are encouraged to begin language study in the appropriate language as undergraduates. Please contact the Department of Education for further information on these programs.

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, Coordinator of Graduate Programs.

Electrical Engineering

School of Engineering
Department of Electrical Engineering

(907) 474-7137

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 111X — Methods of Written Comm 3
MATH 200 — Calculus 4
ES 101 — Descriptive Geometry for Engineers 2
Perspectives on the Human Condition 3
CHEM 105 — General Chemistry 4

Spring Semester — *17 credits*
SPC 131X or 141X 3
MATH 201 — Calculus 4
EE 102 — Intro. to Electrical Engineering 3
CHEM 106 — General Chemistry 4
Perspectives on the Human Condition 3

Second Year

Fall Semester — *18 credits*
MATH 202 — Calculus 4
PHYS 211 — General Physics 4
ES 201 — Computer Techniques 3
EE 203 — Fund. of Elec. Engineering 4
Perspectives on the Human Condition 3

Spring Semester — *15 credits*
MATH 302 — Differential Equations 3
PHYS 212 — General Physics 4
ES 208 — Mechanics 4
EE 204 — Fund. of Elec. Engineering 4

Third Year

Fall Semester — *17 credits*
EE 333 — Physical Electronics 4
EE 353 — Circuit Theory I 3
Approved Math Elective** 3
Perspectives on the Human Condition 3
Option I: Communications
EE 311 — Applied Engineering Electromagnetics 3
EE 331 — High Frequency Lab 1
Option II: Power and Control
EE 303 — Electrical Machinery 4
Option III: Computer Engineering
EE 442 — Digital Syst. Anal. & Design I 4

Spring Semester — *18 credits*
EE 334 — Electronic Circuit Design 4
EE 354 — Engineering Signal Analysis 3
ENGL 211X — Intermediate Exposition, with Modes of Literature or
ENGL 213X — Intermediate Exposition 3
EE 471 — Fundamentals of Automatic Control 4
Option I: Communications
EE 312 — Electromagnetic Waves and Devices 3
EE 332 — Electromagnetics Laboratory 1
Option II: Power and Control
EE 404 — Electric Power Systems 4
Option III: Computer Engineering
EE 443 — Digital Systems Analysis and Design II 4

Fourth Year

Fall Semester — *18 credits*
Perspectives on the Human Condition 3
Option I: Communications
Approved Engineering Science Elective*** 3
EE 303 — Electrical Machinery 4
EE 442 — Digital Systems Analysis and Design I 4
EE 461 — Communications Systems 4
Option II: Power and Control
Approved Engineering Science Elective*** 3

EE 311 — Applied Engineering Electromagnetics 3
EE 331 — High Frequency Lab 1
EE 406 — Electrical Power Engineering 4
EE 442 — Digital Systems Analysis and Design I 4
Option III: Computer Engineering
EE 303 — Electrical Machinery 4
EE 311 — Applied Engineering Electromagnetics 3
EE 331 — High Frequency Lab 1
EE 451 — Digital Signal Processing 4
EE 461 — Communications Systems 4

Spring Semester — 17 credits
ESM 450 — Economic Analysis and Operation 3
Perspectives on the Human Condition 3
Approved Engineering Science Elective*** 3
Approved EE Elective 3-4
Approved EE Design Elective 2-3
Must take State of Alaska Engineer-in-Training Examination

*Perspectives on the Human Condition and ES 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

(907) 474-6121

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

(907) 474-7193

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 111X and English 211X or 213X, 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 111X and English 211X or 213X 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 111X and English 211X or 213X, 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

(907) 474-6129

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

(907) 474-7874

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
PS 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
PS 263 — Alaska Native Politics	3
ENGL 349 — Narrative Art of Alaska Native Peoples (in English translation)	3
LING/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

(907) 451-7223

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 university and A.A.S. requirements:	Credits
Communications:	
ENGL 111X and ENGL 211X, 212*, or 213X	6
SPC 131X or 141X	3
Mathematics or Natural Science:	
A math or natural science course at the 100 level or above	3
Humanities, social sciences, mathematics, natural science or Perspectives on the Human Condition	3
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 241 — 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

*ENGL 212 does not fulfill the second half of the written communication requirement for the baccalaureate degree.

Fire Science

School of Career and Continuing Education
Service Industry Department

(907) 474-5264

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 university and A.A.S. requirements:	Credits
Communications:	
ENGL 111X and ENGL 211X, 212*, or 213X	6
SPC 131X or 141X	3
Mathematics or Natural Science:	
A math or natural science course at the 100 level or above	3
Humanities, social sciences, mathematics, natural science or Perspectives on the Human Condition	3
2. Complete the following major degree requirements:	
FSCI 101 — Introduction to Fire Science	3
FSCI 105 — Fundamentals of Fire Prevention	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 I	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 151 — Wildland Fire Control I	3
FSCI 162 — Methods of Instruct for Fire Service Training	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 — Building and Fire Codes	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.

*ENGL 212 does not fulfill the second half of the written communication requirement for the baccalaureate degree.

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 university and A.A.S. requirements:	Credits
Communications:	
ENGL 111X and ENGL 211X, 212*, or 213X	6
SPC 131X or 141X	3
Mathematics or Natural Science:	
A math or natural science course at the 100 level or above	3
Humanities, social sciences, mathematics, natural science or Perspectives on the Human Condition	3
2. Complete the following major degree requirements:	
EMTT 103 — Emergency Trauma Training (ETT) First Responder	3
or	
EMTT 119 — Emergency Medical Technician I	4
FSCI 151 — Wildland Fire Control I	3
FSCI 155 — Wildland Fire Behavior	3
FSCI 157 — Air Operations and Safety	3
FSCI 158 — Fire Operations Functions	3
FSCI 252 — Wildland Fire Prevention, 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 156 — Fire Planning Function	3
FSCI 161 — Fire Logistics Functions	3
FSCI 162 — Methods of Instruct for Fire Service Training	3
FSCI 204 — Hazardous Materials I	3
FSCI 256 — Fire Planning and Multiple Use Management	3
FSCI 258 — Prescribed Burning and Fuels Management	3
FSCI 260 — Fire Research and Development	3
FSCI 270 — Incident Command Function	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.

*ENGL 212 does not fulfill the second half of the written communciation requirement for the baccalaureate degree.

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 158 — Fire Operations Functions	3
FSCI 161 — Fire Logistics Functions	3
Major electives	3
Subtotal	14-15
Spring Semester	
FSCI 155 — Wildland Fire Behavior	3
FSCI 157 — Air Operations Safety	3
FSCI 252 — Wildland Fire Prevention, 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

(907) 474-7289

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 and B.S. degree requirements.

2. Complete the following degree and program (major) requirements:

A. Fisheries Core Courses:

	Credits
General (32 credits)	
NRM 101 — Conservation of Natural Resources	3
ENGL 414 — Research Writing	3
STAT 200 — 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
CS 201 — Computer Science I	3
GEOG 205 — Elements of Physical Geography	3
Biology (27 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 384 — Biol. of Freshwater Fish of Alaska	3
BIOL 427 — Ichthyology	4
Fisheries (9 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

*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
NRM 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 — Regression and Analysis of Variance (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)
CS 202 — Computer Science 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
NRM 400 — Natural Resources Policies	3
NRM 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 307 — Personnel Management	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.

Food Science and Technology

University of Alaska Fairbanks/
Oregon State University
Cooperative Program

(907) 474-7289

Food science and technology is concerned with the scientific and engineering principles as applied to processing and preserving food. Food technologists work in the seafood industry as quality control supervisors, technical sales representatives, and mid-to-top level managers. The food industry is the largest employer in the United States, and more job openings are available for food technologists than there are people to fill them.

For students interested in the field of food technology, UAF's School of Fisheries and Ocean Sciences offers a program in cooperation with Oregon State University leading to a Bachelor of Science degree in Food Science and Technology. Students enrolled in this program complete their freshman and sophomore years at UAF, then transfer to Corvallis, Oregon to complete their junior and senior years and earn a Bachelor of Science degree from Oregon State University under the Western Undergraduate Exchange (WUE) program. The academic program combines principles and concepts acquired in the life sciences, chemistry, physics, and engineering. The core curriculum at Oregon State University is approved by the Education Committee of the Institute of Food Technologists, the professional society of international food scientists.

For further information on this program, please contact UAF's School of Fisheries and Ocean Sciences at (907) 474-7289.

Foreign Languages

College of Liberal Arts
Department of Foreign Languages and Literatures

(907) 474-7396

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 and B.A. degree requirements.
2. 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
ENGL 310 — Literary Criticism	3
ENGL 318 — Modern English Grammar	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
History: Once lower division and one upper division, or two upper division courses related to the student's language area	3
ART 261 or 262 — History of World Art	3
One course from the following as related to student's language focus:	
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 402 — Man and Nature	3
Option B (Career-oriented Option)	
a. LING 101 — 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 agreed upon with the advisor according to the student's career preferences)	21
II. Major Requirements (two languages required) First Language (French, German, Russian or Spanish) (above 100 level)	24-26

Complete the following courses:

201/202 — 6-8 credits
301/302 — 6 credits
431/432 — 6 credits
487/488 — 6 credits

Second Language (Danish, French, German, Japanese, Russian or Spanish) 201/202; 301/302	12-14
3. Minimum credits required	130

Where appropriate, courses listed under I and II may be counted toward fulfillment of B.A. requirements listed under 2.

Foreign language majors may not substitute a language for any of the six CORE courses in Perspectives on the Human Condition.

Foreign language majors are encouraged to spend one or both semesters of their junior year in an exchange program appropriate to their language focus.

MINOR in Foreign Languages
A minor in foreign languages requires 15 credits, 12 of which must be at the 200 level or above.

Forestry

University of Alaska Fairbanks/
Northern Arizona University
Cooperative Program

(907) 474-5276

Accredited degree programs in forestry provide students with a foundation in the biological, social and physical sciences and professional education in forest sciences. The academic program is a blend of classroom, laboratory, and field work to develop skills for a professional career in forestry.

For students interested in pursuing an accredited degree in forestry, UAF's School of Agriculture and Land Resources Management offers a program in cooperation with Northern Arizona University. Students enrolled in this program complete the first two years of their program at UAF, then transfer to Northern Arizona University's forestry program to complete their junior and senior years. The forestry program at Northern Arizona University is accredited by the Society of American Foresters.

The pre-forestry program at UAF introduces students to land resources management and provides lower level courses common to most forestry curricula. Students desiring to transfer to a forestry degree program elsewhere should consult their faculty advisor before registering for classes. This will ensure a schedule that provides for the expeditious transfer of credit.

Students who are considering forestry as a career choice should contact the curriculum coordinator within the School of Agriculture and Land Resources Management at (907) 474-5276 for further information.

General Science

College of Natural Sciences
Department of Physics

(907) 474-6198

Degrees: B.S., M.S.
Minimum Requirements for Degrees: B.S. — 130 credits; M.S. — 30 additional credits

The B.S. in General Science has been designed to provide a broad background in the Natural Sciences and to allow for specialization in at least two of the disciplines within the Natural Sciences as well as an

additional area of associated interest. This degree offers more breadth in the Natural Sciences than the other degree programs and may be classified as an interdisciplinary degree. Thus, one option available to a student in this program would be to select a minor in Education which would allow the student to earn a teaching certificate in General Science.

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	*17 credits*
ENGL 111X — Methods of Written Comm	3
MATH 107-108 — Elementary Functions and Trigonometry	6
CHEM 105X* — General Chemistry or PHYS 103X* — College Physics	4
BIOL 105X — Fundamentals of Biology	4

Spring Semester	*15 credits*
SPC 131X or 141X	3
MATH 200 — Calculus	4
CHEM 106X* — General Chemistry or PHYS 104X* — College Physics	4
BIOL 106X — Fundamentals of Biology	4

Second Year

Fall Semester	*18 credits*
PHYS 103X* — College Physics or CHEM 105X* — General Chemistry	4
ECON 201X — Principles of Economics I	3
GEOS 101X — The Dynamic Earth	4
Perspectives on the Human Condition	3
ENGL 211X — Intermediate Exposition with Modes of Literature or ENGL 213X — Intermediate Exposition	3

Spring Semester	*16 credits*
PHYS 104X* — College Physics or CHEM 106X* — General Chemistry	4
GEOS 112X — Historical Geology	4
Perspectives on the Human Condition	3
Electives	5

*PHYS 211-213 may substitute for PHYS 103-104 and CHEM 212 may substitute for CHEM 105-106.

Third and Fourth Years

By at least the beginning of his/her junior year, a student in General Science should decide upon his/her major and minor fields of interest. A B.S. in General Science requires the student to choose two majors or one major and two minors in selected fields of interest.

A major requires the completion of at least 20 credits *in addition* to the foundation courses in the discipline. The first major must be selected from Biological Sciences, Chemistry, Geosciences, or Physics.

A student then has the option of selecting: (1) a second major in biological sciences, chemistry, geosciences, physics, or mathematics or(2) two minors, one of which must be in the natural sciences or mathematics, while the other may be selected from the following disciplines: anthropology, English, French, German, Spanish, Russian, history, political science, economics, or education (minimum course work required for certification). The minor must include 12 or more credits in addition to the foundation courses in that discipline.

A General Science student, after meeting with his/her General Science advisor, should contact the head of the major/minor department as early as possible to determine course requirements in that discipline. These courses will be determined by the department head of the discipline and will reflect the student's needs as well as the intent of the General Science program.

Additional Information:
1. All prerequisites of courses elected must be met.
2. A grade of "C" or better must be attained in all courses for the major or minor.
3. One year of German or Russian is recommended.
4. Courses selected to complete the remaining general degree requirements must be the remaining required courses from Perspectives on the Human Condition section of the baccalaureate core.
5. A student does *not* need to take MATH 107-108 if he/she successfully completes MATH 200 with a grade of "C" or better.

General Science — M.S. Degree

1. Complete the general University and Master's Degree requirements.
2. Complete a minimum of 30 credits of approved courses. At least 24 credits, including thesis and/or research, must be at the 600 level.

The Department of General Science offers a M.S. in Biological Sciences, Chemistry, Geosciences, and Physics. 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 disciplines is cooperating with at least one other discipline within the University. A prospective candidate must meet the general requirements for admission and for the awarding of the degree. At least 21 credits must be earned in science and mathematics. At least 12 credits must be earned in the major discipline selected. A thesis (maximum of three credits) or project (no credit) must be completed in the major discipline. It is not intended that the individual courses comprising the program merely satisfy the credit requirements; each course should contribute to the specific aim of the candidate, and the thesis or project should reflect this aim.

For complete information on the graduate program in general science, see the UAF Graduate Catalog.

Geography

College of Liberal Arts
Department of Geography

(907) 474-7494

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.
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 GEOG 101 or 103 and 205.

Geological Engineering

School of Mineral Engineering
Department of Mining and Geological Engineering

(907) 474-7388

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 111X — Methods of Written Communications 3
MATH 200 — Calculus 4
CHEM 105X — General Chemistry 4
ES 101 — Descriptive Geometry for Engineers 2
Perspectives on the Human Condition 3

Spring Semester — *17 Credits*
SPC 131X or 141X 3
MATH 201 — Calculus 4
GE 261 — General Geology for Engineers 3
CHEM 106X — General Chemistry 4
Perspectives on the Human Condition 3

Second Year
Fall Semester — *18 Credits*
MATH 202 — Calculus 4
GEOS 213 — Mineralogy 4
PHYS 211X — General Physics 4
ENGL 211X or 213X — Intermediate Exposition 3
MIN 202 — Mine Surveying 3

Spring Semester — *17 Credits*
ES 201 — Computer Techniques 3
PHYS 212X — 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 200 — Elementary Probability & Statistics 3
Perspectives on the Human Condition 3

Summer — *Credits*
GEOS 351 — Field Geology 6

Fourth Year
Fall Semester — *17 Credits*
GE 471 — Remote Sensing for Engineering 3
Perspectives on the Human Condition 9
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.
**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

(907) 474-7565

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 111X — Methods of Written Communication	3
ENGL 211X — Intermed. Expos. with Modes of Literature or ENGL 213X — Intermed. Exposition	3
SPC 131X or 141X	3
Perspectives on the Human Condition	8
Mathematics (Select appropriate series)	11 or 15
For Geology options: MATH 200-201-Calculus (8), and STAT 300-Statistics (3)	
For Geophysics Option: MATH 200, 201, 202-Calculus (11), MATH 302-Differential Equations (3)	
PHYS 211X-212X — General Physics (PHYS 103X-104X may be taken for General Geology Option)	8
CHEM 105X-106X — General Chemistry	8
Computer literacy equivalent to CS 201	0-3

3. For General Geology, Economic Geology and Petroleum Geology options, complete the following requirements:

Geology Core Courses:	Credits
GEOS 101X — The Dynamic Earth	4
GEOS 112X — 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

*GEOS 351 is offered at UAF when there is sufficient demand. In years when GEOS 351 is not offered (decision made early in fall semester), students are required to take a 6-credit field geology class at another institution. The Department of Geology and Geophysics will offer financial assistance to geology majors when GEOS 351 is not offered to attend an approved field camp at another institution. Amount of the assistance is dependent on the number of students involved, but will typically be about $500. The Geology and Geophysics undergraduate advisor will assist students in placement in a field geology class and will inform the department head about students requiring financial aid.

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 101X — The Dynamic Earth	4
GEOS 213 — Mineralogy	4
GEOS 418 — Basic Geophysics	3
GEOS 419 — Continuum Mechanics	4
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 112X — 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

(907) 474-7565

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

College of Rural Alaska
Department of Behavioral Sciences and Human Services

(907) 474-7240

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.

History

College of Liberal Arts
Department of History

(907) 474-7126

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. (Complete HIST 100X as part of the core.)
2. Complete the following program (major) requirements:

Complete any three of the following:	Credits
HIST 101 — Western Civilization	3
HIST 102 — Western Civilization	3
HIST 121 — East Asian Civilization	3
HIST 122 — East Asian Civilization	3
HIST 131 — History of the U.S.	3
HIST 132 — History of the U.S.	3
Upper-division electives in history	15
Complete the following:	
HIST 475 — Historiography	3
HIST 476 — Historical Method	3
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

(907) 474-7398

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

College of Rural Alaska
Department of Behavioral Sciences and Human Services

(907) 474-7240

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 credits)	
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 credits)
(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:
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
RD 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.

Human Service Technology

School of Career and Continuing Education
Academic Programs

(907) 474-6658

Degree: A.A.S.
Minimum Requirements for Degree: 60 credits

The Human Service Technology program provides training and knowledge in basic helping skills needed for entry level employment in public, private and volunteer human service agencies. The Human Service Technician may provide case management, needs assessment, advocacy, crisis intervention and stabilization, and supportive task-centered short term counseling under the supervision of a specialist worker and usually within a multi-disciplinary team. Human Servaice Technicians are employed in a wide variety of human service settings such as: mental health, mental retardation and developmental disabilities, public assistance, corrections and substance abuse treatment. Persons seeking a career in human service should recognize that in order to be successful they must be emotionally stable, creative and flexible. Human Service Technicians will have to be able to work with diverse groups of people and individuals with a wide variety of ages, social and cultural backgrounds and life situations.

Requirements

Human Service Technology — A.A.S. Degree
1. Complete the following general university and A.A.S. requirements: *Credits*
Communications:
ENGL 111X and ENGL 211X, 212*, or 213X 6
SPC 131X or 141X 3
Mathematics or Natural Science:
A math or natural science course at the 100 level or above 3
PSY 101 — Introduction to Psychology 3

2. Complete the following major degree requirements:
HST 101 — Introduction to Human Service 3
HST 105 — Personal Awareness and Growth 3
HST 110 — Social Problems and Community Resources 3
HST 115 — Human Growth and Development 3
HST 120 — Cultural Diversity and Human Service 3
HST 125 — Introduction to Addictive Processes 3
HST 130 — Family and Family of Orig Issues in Human Serv 3
HST 205 — Basic Princ of Group Dynam and Therap Activ 3
HST 210 — Crisis and Grief Counseling 3
HST 215 — Individual Interviewing and Assessment 3
HST 220 — Human Service Case Management 3
HST 230 — Human Service Practicum I (8 hour/week) 2
HST 231 — Human Service Practicum II (8 hour/week) 2
HST 240 — Human Service Seminar I 1
HST 241 — Human Service Seminar II 1
Subtotal 39

3. Complete 6 credits from the following:
HST 250 — Current Issues in Human Service
and/or General Electives 6

Degree Total 60

*ENGL 212 does not fulfill the second half of the written communication requirement for the baccalaureate degree.

Interdisciplinary Studies

Degrees: A.A.S., B.A., B.S., B.T., M.A., M.S., Ph.D.
Minimum Requirements for Degrees: A.A.S. — 60 credits; B.A., B.S. or B.T. — 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 undergraduate program of the university has an opportunity to achieve recognition for carrying out an approved interdisciplinary program which satisfies the requirements for an associate or baccalaureate degree. For this purpose the associate of applied science, bachelor of arts, bachelor of science and bachelor of technology degrees in interdisciplinary studies are offered.

Students may develop an interdisciplinary curriculum proposal leading to an A.A.S., B.A., B.S. or B.T. degree in interdisciplinary studies upon completion of 15 credits at UAF, and preferably 30 credits (for the associate's degree), or 60 credits (for the bachelor's degree), prior to graduation. 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 undergraduate degree. All general requirements for the A.A.S., B.A., B.S. or B.T. degree must be met.

Students who are interested in pursuing an undergraduate degree in interdisciplinary studies, or who want to explore this as an option, may contact the Academic Advising Center for assistance in finding faculty advisors and developing a curriculum proposal.

Applicants must submit to the Vice Chancellor for Academic Affairs their proposal for the program they wish to pursue, specifying the degree (A.A.S., B.A., B.S. or B.T.), proposed curriculum and rationale. A committee of at least three faculty members who are familiar with the interdisciplinary subject will be appointed to review the proposal and make a recommendation to the vice chancellor. If the curriculum is approved, this committee will advise the student throughout the program. The degree title will be chosen by the 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.

For complete information on interdisciplinary graduate programs, see the UAF Graduate Catalog.

Journalism and Broadcasting

College of Liberal Arts
Department of Journalism and Broadcasting

(907) 474-7761

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. 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
JB 101 — Introduction to Mass Communications or JB 102 — Broadcasting and Society	3
JB 301 — Basic Newsgathering and Processing	4
JB 320 — Journalism in Perspective	3
JB 400 — Media Practicum	3
JB 413 — Mass Media Law and Regulations	3

B. Complete one of the following sequences:

News-Editorial	18 Credits
JB 444 — Advanced Newsgathering and Processing	3
One of the following:	
JB 203 — Basic Photography	3
JB 215 — Audio Production	3
JB 316 — Television Production	3
Four of the following:	
JB 204 — Basic Photojournalism	3
JB 240 — International Communications	3
JB 303 — Intermediate Photography	3
JB 311 — Magazine Article Writing	3
JB 323 — Publication Editing	3
JB 324 — Typography and Publication Design	3
JB 340 — Approaches to the Study of Mass Communication	3
*JB 326 — Principles of Advertising	3
JB 402 — Advanced Photography	3
JB 411 — Advanced Writing for Publication	3
JB 424 — Magazine Production	3
JB 433 — Public Relations	3
JB 492 — Seminar	2 or 3

**Broadcast*	18 Credits
JB 215 — Audio Production	3
JB 316 — Television Production	3
Four of the following:	
JB 204 — Basic Photojournalism	3
JB 240 — International Communications	3
JB 317 — Broadcast Journalism	3
*JB 326 — Principles of Advertising	3
JB 340 — Approaches to the Study of Mass Communication	3
JB 372 — Instructional Television	3
JB 407 — Programming and Production	3
JB 415 — News/Documentary Television Production	3
JB 416 — Advanced Broadcast Production	3
JB 433 — Public Relations	3
JB 492 — Seminar	2 or 3

C. 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.

D. To assure the journalist of a broad liberal arts education, 90 credits must be outside of Journalism-Broadcasating, 65 of which should be from courses which meet general distribution requirements, i.e., those with course classifications of "h", "s", "n", "w", and "o".

3. Minimum credits required 130

*Cross-listed with BA 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
JB 101 — Introduction to Mass Communications or JB 102 — Broadcasting and Society	3
JB 301 — Basic Newsgathering and Processing	4

Justice

College of Liberal Arts
Department of Political Science

(907) 474-7609

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 credits)	
JUST 110 — Introduction to Justice	3
JUST 222 — Research Methods	3
JUST 250 — Development of Law	3
JUST 251 — Criminology	3
JUST 258 — Juveniles and the Law	3
JUST 330 — Justice and Society	3
JUST 460 — Justice Processes	3

Justice Electives: 15 credits in justice courses of which 12 credits must be upper division.

3. Minimum credits required 130

MINOR in Justice:
Complete 15 credits in justice, including JUST 110.

Justice

School of Career and Continuing Education
Service Industry Department

(907) 474-5264

Degree: A.A.S.
Minimum Requirements for Degree: 60 credits

This degree program is presently suspended.

Law

Pre-Professional Program

(907) 474-6396

Law education prepares students to become attorneys. Attorneys are concerned with the interpretation of law and its application to specific situations. This involves doing in-depth research, writing reports and briefs, advising clients and representing parties in reports and briefs, advising clients and representing parties in courts. Often law school graduates go on to hold government office, or to serve as judges, public servants, teachers or administrators.

Law school consists of three years of graduate level study. Instruction includes classroom lecture and discussion, considerable outside research, and practice of courtroom procedures. Upon graduation, students must pass a state bar exam in order to practice.

Completion of a bachelor's degree is required for admission into most law schools. While law schools do not prescribe a specific major for admission, students should have a strong academic record and high scores on the Law School Admission Test (LSAT).

A liberal education is the best preparation for law school. Students planning a legal career should select courses which are designed to enhance communication skills, both oral and written, to expand understanding of human values and institutions, and to develop analytical reasoning and logical thinking. Areas of study which are valuable for pre-law majors are English, philosophy, history, literature and the social sciences. Additionally, courses in accounting and economics are recommended. Recent trends indicate that students with an undergraduate degree in the natural sciences are gaining in favor for law school admission.

Students interested in a legal career are assigned a special pre-law advisor, through the Academic Advising Center, to discuss program planning, professional schools and financial planning.

Library Science

Pre-Professional Program

(907) 474-6396

The field of library and information science engages students in professional positions concerned with the management of information in libraries and other environments. One graduate program states that the "contemporary librarian has become an essential part of the complex communication/information network that now encircles the globe. Today's information professional must understand how information is created and disseminated in society; must be familiar with print, nonprint and electronic media; and must be adept in the use of computers, automated techniques, and information networks."

For a professional career in library science, a one-to-two year program of graduate study is generally required. Course work in the graduate program may include attention to planning and evaluation related to acquiring, organizing and accessing information in library settings; management tools; and design and provision of information services. Special emphasis on topics such as law or medicine may also be available with some programs.

The caliber of one's undergraduate work, as well as test results on the Graduate Record Exam (GRE), are of particular importance when applying for admission to a program of professional library studies. While librarians have traditionally come from a humanities background, a broader scope of preparation is expected by schools of library science.

At UAF, pre-library science students pursue a broad, general background, rather than a prescribed curriculum. Students are advised to include courses in computer applications and programming, statistics and foreign languages so as to satisfy the demands of the library science field and the admission requirements of some graduate programs. Concentrations in the social and physical sciences are valuable as the number of special libraries increases.

Advisement for students interested in a career in library science is available through the Academic Advising Center. Also, students may consult the career guidance file maintained in Rasmuson Library.

Linguistics

College of Liberal Arts
Department of Linguistics

(907) 474-6886

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 credits)
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 3

B. Major requirements (30 credits)
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 courses:
LING 216 — Languages of the World 3
LING/ED 303 — Language and Literacy Development 3
LING 340 — Aspects of Bilingualism 3
LING 410 — Second Language Teaching 3
LING 450 — Language Policy and Planning 3
LING 482 — Topics in Linguistics 3
(may be taken twice)
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
SPC 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 15 credits in linguistics. Three of these credits may be from related courses in other departments as listed under B. above.

Marine Biology

School of Fisheries and Ocean Sciences
Graduate Program in Marine Sciences and Limnology

(907) 474-7531

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

(907) 474-7332

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 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 21 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 300	6
TOTAL	20

C. Secondary Education

STAT 300 — Statistics	3
MATH 305 — Geometry	3
CS 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 300 — 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, in addition to nine departmentally approved credits.

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

(907) 474-7209

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 111X — Methods of Written Comm	3
MATH 200 — Calculus	4
ES 101 — Descriptive Geometry for Engineers	2
CHEM 105 — General Chemistry	4
Perspectives on the Human Condition	3

Spring Semester	*17 credits*
SPC 131X or 141X	3
MATH 201 — Calculus	4
ES 201 — Computer Techniques	3
CHEM 106 — General Chemistry	4
Perspectives on the Human Condition	3

Second Year

Fall Semester	*17 credits*
PHYS 211X — General Physics	4
MATH 202 — Calculus	4
ES 209 — Statics	3
ME 321 — Industrial Processes	3
ENGL 213X — Intermediate Exposition	3

Spring Semester	*16 credits*
PHYS 212X — General Physics	4
MATH 302 — Differen. Equations	3
ES 210 — Dynamics	3
ES 346 — Thermodynamics	3
Perspectives on the Human Condition	3

Third Year

Fall Semester — *16 credits*

ES 301 — Engineering Analysis 3
ES 307 — Elements of Electrical Engr. 3
ES 331 — Mechanics of Materials 3
ES 341 — Fluid Mechanics 4
Perspectives on the Human Condition 3

Spring Semester — *16 credits*

ME 302 — Mechanical Design I 4
ME 313 — Mech. Engr. Thermodyn. 3
ME 441 — Heat and Mass Transfer 3
ES 308 — Instrumentation and Measurement 3
Perspectives on the Human Condition 3

Fourth Year

Fall Semester — *15 credits*

ME 408 — Dynamics of Systems 3
ME 415 — Thermal Systems Lab 2
ME Elective** 3
ME 334 — Elements Material Science Engr 3
Technical Elective* 3
Perspectives on the Human Condition 3

Spring Semester — *17 credits*

ME 403 — Mechanical Design II 4
ME 487 — Design Project 3
ME 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 ME 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

(907) 474-6396

For students interested in pursuing a Bachelor of Science degree in Medical Technology, UAF offers a program in cooperation with University of Washington. Students enrolled in this program complete the first four semesters of their program at UAF, then apply for acceptance into the professional phase of the medical technology program at the University of Washington for an additional seven semesters. 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. A Bachelor of Science degree is granted from University of Washington at the completion of the program.

While at UAF, students are required to complete 60 semester credits with a GPA of 3.0, to include the following courses: biology (BIOL 105, 106), chemistry (CHEM 105, 106), and math (MATH 271, 272).

For further information on the baccalaureate medical technology program, please contact the Academic Advising Center at the University of Alaska Fairbanks at (907) 474-6396.

Requirements

60 semester credits with a GPA of 3.00 including the following courses:

	Credits
BIOL 105X-106X — 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 105X-106X — General Chemistry	8
CHEM 212 — Quantitative Analysis	4
CHEM 321-322-324 — Organic Chemistry and lab	9
MATH 271-272 or STAT 200 — Calculus; Statistics	7 or 8
ENGL 111X-211X or 213X — 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.

Medicine

Pre-Professional Program

(907) 474-6396

Physicians serve a broad range of functions within the field of medicine; diagnosing disease, prescribing treatment, supervising patient care and participating in the improved delivery of health. As an alternative to direct patient care, physicians often branch off into other arenas of medicine, such as basic and applied research, teaching or administration.

Professional medical education consists of four years of graduate level study. Typically, the first two years of medical school are comprised of classroom instruction and laboratory work; the second two years consist of clinical rotations. Following graduation from medical school, students may elect to continue their training by doing a one year internship and/or a one-to-three year residency. The residency option is required in order to specialize in medicine.

Upon application to medical school, a student's overall academic achievement will be evaluated together with results of the Medical College Admission Test (MCAT). While medical schools do not require that students pursue a specific major at the undergraduate level, applicants are generally expected to have a foundation in biology, chemistry, and physics. AT UAF the courses which satisfy this are: chemistry (CHEM 103X and 104X or 105X and 106X), organic chemistry (CHEM 321 and 322), anatomy and physiology (BIOL 111 and 112), biology (BIOL 105X and 106X), and physics (PHYS 103X and 104X). In addition, medical schools recommend students have a background in the social sciences and humanities. While medical schools will consider applicants who have completed three years of undergraduate work, most entering medical students have completed a bachelor's degree.

Students who are considering medicine as a career choice should contact the Academic Advising Center to be assigned an academic advisor. Program advisement, exploration of professional schools and licensing requirements, and financial planning are available to meet the needs of students in fulfilling their career aspirations.

Military Science

College of Liberal Arts
Department of Military Science

(907) 474-7501

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

(907) 474-7388

Degree: M.S.

Minimum Requirements for Degree: 30-36 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

(907) 474-7388

Degrees: B.S., M.S., E.M.

Minimum Requirements for Degrees: B.S. — 134 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 111X — Methods of Written Communications	3
MATH 200 — Calculus	4
CHEM 105X — General Chemistry	4
MIN 103 — Introduction to Mining Engineering	2
MIN 104 — Mining Safety and Operations Lab	1
Perspectives on the Human Condition	3

Spring Semester	*16 Credits*
CHEM 106X — General Chemistry	4
SPC 131X or 141X	3
MATH 201 — Calculus	4
ES 101 — Descriptive Geometry for Engineering	2
GE 261 — General Geology for Engineers	3

Second Year

Fall Semester	*17 Credits*
MATH 202 — Calculus	4
GEOS 262 — Rocks and Minerals*	3
PHYS 211 — General Physics	4
MIN 202 — Mine Surveying	3
MIN 313 — Introduction to Mineral Preparation	3

Spring Semester	*17 Credits*
PHYS 212 — General Physics	4
ES 208 — Mechanics	4
ES 201 — Computer Techniques	3
ENGL 211X or 213X — Intermediate Exposition	3
MATH 302 — Differential Equations	3

Third Year

Fall Semester	*17 Credits*
ES 331 — Mechanics of Materials	3
ES 341 — Fluid Mechanics	4
STAT 300 — Statistics	3
ES 307 — Elements of Electrical Engineering	3
Perspectives on the Human Condition**	3

Spring Semester	*18 Credits*
ES 346 — Basic Thermodynamics	3
MIN 370 — Rock Mechanics	3
MIN 301 — Mine Plant Design	3
MIN 302 — Underground Mine Environmental Engineering	3
GEOS 332 — Ore Deposits and Structure*	3
Perspectives on the Human Condition	3

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
Perspectives on the Human Condition	3

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[1]	6
Perspectives on the Human Condition***	3

Notes:

[1] 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.

* On alternate years, Perspectives on the Human Condition requirement should be taken.

** On alternate years, GEOS 262 should be substituted.

*** On alternate years, GEOS 332 should be substituted.

*** Recommended Technical Electives for B.S. in Mining Engineering**

1. MIN 472 — Design, Construction and Stability of Mining Openings.
2. GE 405 — Exploration Geophysics
3. GE 440 — Slope Stability
4. MIN 410 — Surface Materials Handling Systems

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

(907) 474-7505

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

(907) 474-7555

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 MUS 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 111X or equivalent and 211X or 213X	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
MUS 351 — Conducting	3
Ensembles (1 per semester)	8

Secondary Area:
Twenty-seven 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
[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 111X or equivalent and 211X or 213X	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 111X or equivalent and Engl. 211X or 213X	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 111X or equivalent and 211X or 213X	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

(907) 474-5550

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.) The emphasis in aviation integrates specialized aircraft use in resource management through courses in Aviation Technology available in the School of Career and Continuing Education.

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.

DIVISION OF RESOURCE MANAGEMENT

Natural Resources Management — B.S. Degree

1. Complete general university requirements and B.S. degree requirements.

2. Complete the following program (major) requirements:

	Credits
BIOL 105X-106X — Fundamentals of Biology, I and II	8
BIOL 271 — Principles of Ecology	4
CHEM 105X-106X — General Chemistry	8
ECON 235 — Intro. to Nat. Resource Econ.	3
ECON 335 — Intermediate Natural Resource Econ.	3
GEOS 101 — The Dynamic Earth	4
NRM 101 — Conservation of Natural Resources	3
NRM 201 — Processes of Natural Resources Management	3
NRM 251 — Silvics and Dendrology	3
NRM 310 — Agricultural Concepts and Techniques	3
NRM 340 — Natural Resources Measurements	3
NRM 370 — Introduction to Watershed Management	3
NRM 380 — Soils	3
NRM 400 — Natural Resource Policies or NRM 401 — Natural Resource Legislation	3
NRM 430 — Land Use Planning	3
NRM 460 — Outdoor Recreation	3
WLF 201 — Wildlife Management Principles	3

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
NRM 102 — Practicum in Natural Resources	1-3
NRM 211 — Introduction to Agronomy and Horticulture	3
NRM 320 — Introduction to Animal Science	3
NRM 360 — Outdoor Recreation Planning	3
NRM 411 — Plant Propagation	3
NRM 450 — Forest Management	3
NRM 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 NRM 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
- Aviation Technology
- 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

DIVISION OF FOREST SCIENCES

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 105X-106X — Fundamentals of Biology, I and II	8
BIOL 271 — Principles of Ecology	4
CHEM 105X-106X — General Chemistry	8
ECON 235 — Intro. to Nat. Resource Econ.	3
ECON 335 — Intermediate Natural Resource Econ.	3
GEOS 101 — The Dynamic Earth	4
NRM 101 — Conservation of Natural Resources	3
NRM 201 — Processes of Natural Resources Management	3
NRM 251 — Silvics and Dendrology	3
NRM 340 — Natural Resources Measurements	3
NRM 370 — Introduction to Watershed Management	3
NRM 380 — Soils	3
NRM 400 — Natural Resource Policies or NRM 401 — Natural Resource Legislation	3
NRM 430 — Land Use Planning	3
NRM 460 — Outdoor Recreation	3
WLF 201 — Wildlife Management Principles	3

3. Complete the following courses:

	Credits
CE 112 — Elementary Surveying	3
BIOL 239 — Introduction to Plant Biology	4
NRM 450 — Forest Management	3
NRM 451 — Regeneration and Silviculture of Northern Boreal Forests	3
NRM 452 — Forest Protection	3
NRM 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

WLF 303 — Wildlife Management Techniques....3
WLF 417 — Wildlife Management — Forest and Tundra....2
BA 350 — Introduction to Real Estate and Land Economics....3
BIOL 331 — Systematic Botany....4
NRM 300 — Internships in Natural Resources Management....1-6
(Must Be Forestry Related)
NRM 310 — Agricultural Concepts and Techniques....3
NRM 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
Note: See Forestry (Cooperative Program)

DIVISION OF PLANT AND ANIMAL SCIENCES

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 105X-106X — Fundamentals of Biology, I and II	8
BIOL 271 — Principles of Ecology	4
CHEM 105X-106X — General Chemistry	8
CHEM 321 — Organic Chemistry	3
ECON 235 — Intro. to Nat. Resource Econ	3
ECON 335 — Intermediate Natural Resource Econ	3
STAT 200 — Applied Statistics	3
NRM 101 — Conservation of Natural Resources	3
NRM 102 — Practicum in Natural Resources	1-3
NRM 211 — Introduction to Agronomy & Horticulture	3
NRM 310 — Agricultural Concepts & Techniques	3
NRM 320 — Introduction to Animal Science	3
NRM 380 — Soils	3
NRM 480 — Soil Conservation	3

3. Complete a minimum of 26 credits in the following natural resource electives:

	Credits
GEOS 101 — The Dynamic Earth	4
NRM 201 — Processes of Natural Resources Management	3
NRM 251 — Dendrology and Silvics	3
NRM 300 — Internship in Natural Resources Management	1-6
NRM 312 — Introduction to Range Management	3
NRM 313 — Introduction to Plant Pathology	4
NRM 321 — Applied Animal Nutrition	3
NRM 340 — Natural Resources Measurements	3
NRM 370 — Introduction to Watershed Science	3
NRM 400 — Natural Resources Policies	3
NRM 401 — Natural Resources Legislation	3
NRM 403 — Managing Food Production Systems	4
NRM 411 — Plant Propagation	3
NRM 412 — Field Crop Production	3
NRM 420 — Animal Nutrition and Metabolism	3
NRM 425 — Alaska's Reindeer Industry	3

Any other approved NRM 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
BIOL 239 — Plant Form and Function	4
BIOL 342 — Introductory Microbiology	4
BIOL 362 — Principles of Genetics	4
BIOL 331 — Systematic Botany	4
BIOL 406 — Entomology	4
BIOL 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

MINOR in Natural Resources Management
A minor in Natural Resources Management requires completion of NRM 101 and 15 credits of any other NRM courses, 6 credits of which must be upper division. The minor program must be approved by an NRM advisor.

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

Degrees: B.A., M.A.
Minimum Requirements for Degree: B.A. — 130 credits; M.A. — 30 or more 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, NS 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.

For information on studying at McGill University, Montreal, Canada; the University of Copenhagen, Denmark; or opportunities for study in the U.S.S.R., see Study Abroad.

Requirements

Northern Studies — B.A. Degree
1. Complete general university requirements and B.A. degree requirements.
2. Complete the following program (major) requirements:

	Credits
Northern Studies Core:	
BIOL 104X — 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	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 309— Arctic Prehistory	3
ANS/ANTH 320 — Lang and Culture: Appl to Alaska	3
ANTH 321 — Physical Anthropology of the Americans	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.

Northern Studies — M.A. Degree

The M.A. in northern studies provides graduate academic study of northern policy issues and the cultural, historical, economic, and political contexts of the circumpolar north.

For complete information on the graduate program in northern studies, see the UAF Graduate Catalog.

Nursing

University of Alaska Fairbanks/ University of Alaska Anchorage Cooperative Program

(907) 474-7764

For students interested in pursuing a Bachelor of Science Degree in Nursing, a satellite nursing program is offered at UAF through the University of Alaska Anchorage. The first five semesters of the four-year program may be taken in Fairbanks; the student must then transfer to Anchorage to complete the final three semesters.

The mission of the School of Health Professions is to educate students for productive citizenship, personal growth, and professional nursing practice. Undergraduate students are provided both the theory and clinical base to enable them to assess, plan, implement, and evaluate health care to meet the needs of individuals, families, groups, and communities whose health status varies qualitatively and quantitatively. Instruction and clinical experiences are designed to maximize the student's breadth of understanding of the unique health care needs of various age and sociocultural groups.

The program is designed to reflect Alaskan health care needs and delivery systems, although the graduate is prepared for beginning practice positions in other geographic areas as well.

The baccalaureate program is accredited by the Alaska Board of Nursing and the National League for Nursing. Graduates of the program are eligible to write the National Council Licensure Examination for licensure as a Registered Professional Nurse in any of the 50 states. The program also provides students with the academic base for graduate study.

For further information on the baccalaureate nursing program and continuing education offerings in nursing, please contact: UAA School of Health Professions, Arctic Health Research Building, Suite 106, University of Alaska Fairbanks, Fairbanks, Alaska 99775-1680, (907) 474-7764.

Oceanography

School of Fisheries and Ocean Sciences Graduate Program in Marine Sciences and Limnology

(907) 474-7289

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

(907) 451-7223

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 university and A.A.S. requirements: *Credits*

Communications:
ENGL 111X and ENGL 211X, 212*, or 213X 6
SPC 131X or 141X 3
Mathematics or Natural Science:
A math or natural science course at the 100 level or above 3
Humanities, social sciences, mathematics, natural science or Perspectives on the Human Condition 3

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
OP 105 — Keyboarding II/Intermediate Typewriting 3
OP 106 — Keyboarding III/Advanced Typewriting 3
OP 131 — Business English 3
OP 151 — Microcomputer Word Processing/WordPerfect or
OP 152 — Microcomputer Word Processing/Displaywrite 4 2

OP 203 — Calculating Machines 2
OP 207 — Machine Transcription 2
OP 221 — Filing/Records Management 3
OP 231 — Business Communications 3
OP 244 — Office Procedures 3
Subtotal ..... (minimum of) 26-27

3. Complete 13 (minimum) credits from the following major specialty electives:
ACCT 102 — Elementary Accounting 3
ABUS 155 — Business Math 2
OP 100 — Alphabetic Shorthand 3
OP 101 — Shorthand Principles I 4
OP 102 — Shorthand Principles II 4
OP 201 — Shorthand Principles III 3
OP 210 — Legal Typewriting 3
OP 219 — Legal Machine Transcription 1
OP 211 — Medical Typewriting 2
OP 214 — Medical Machine Transcription 1
Any other CAPS, ABUS or OP course 1-6

4. Complete 7 general electives credits 7
Degree Total 60

*ENGL 212 does not fulfill the second half of the written communication requirement for the baccalaureate degree.

Office Professions — Certificate
1. Complete the following major specialty requirements: *Credits*
Acct. 101 — Elementary Accounting 3
or
OP 142 — Office Accounting I 2
OP 105 — Keyboarding II/Intermediate Typewriting 3
OP 106 — Keyboarding III/Advanced Typewriting 3
OP 131 — Business English 3
OP 151 — Microcomputer Word Processing/Word Perfect or
OP 152 — Microcomputer Word Processing/Displaywrite 4 2
OP 203 — Calculating Machines 2
OP 221 — Filing/Records Management 3

2. Complete 10 credits from the following major specialty electives:
ACCT 102 — Elementary Accounting II 3
ABUS 154 — Human Relations 3
ABUS 155 — Business Math 2
OP 100 — Alphabetic Shorthand 3
OP 101 — Shorthand Principles I 4
OP 102 — Shorthand Principles II 4
OP 210 — Legal Typewriting 2
OP 219 — Legal Machine Transcription 1
OP 211 — Medical Typewriting 2
OP 214 — Medical Machine Transcription 1
OP 231 — Business Communications 3
OP 244 — Office Procedures 3

3. Any other CAPS, ABUS or OP course 3
Certificate Total 30-32

Petroleum Engineering

School of Mineral Engineering
Department of Petroleum Engineering

(907) 474-7734

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*
PETE 103 — Survey of the Energy Industry 2
MATH 200 — Calculus I 4
CHEM 105X — General Chemistry 4
ENGL 111X — Methods of Written Communication 3
Perspectives on the Human Condition 3

Spring Semester *17 Credits*
ES 201 — Computer Techniques 3
MATH 201 — Calculus II 4
GE/GEOS 261 — Geology for Engineers[1] 3
CHEM 106X — General Chemistry II 4
SPC 131X or 141X — Fundamentals of Oral Communication 3

Second Year
Fall Semester *17 Credits*
PETE 205 — Introduction to Petroleum Drilling and Production 3
MATH 202 — Calculus III 4
PHYS 211X — General Physics I 4
ENGL 211X/213X — Intermediate Exposition 3
Perspectives on the Human Condition 3

Spring Semester *17 Credits*
ES 208 — Mechanics 4
MATH 302 — Differential Equations 3
PHYS 212X — General Physics II 4
ES 346 — Basic Thermodynamics 3
Perspectives on the Human Condition 3

Third Year
Fall Semester *16 Credits*
PETE 301 — Reservoir Rock Properties 3
MATH 310 — Numerical Analysis 3
ES 331 — Mechanics of Materials 3
ES 341 — Fluid Mechanics 4
Perspectives on the Human Condition 3

Spring Semester *18 Credits*
PETE 302 — Well Logging 3
PETE 305 — Underground Fluid Behavior and Lab 4
PETE 426 — Drilling Engr. & Lab 4
ME 441 Heat and Mass Transfer 3
GEOS 370 — Struct. Geol. for Petr. Engr 4

Fourth Year
Fall Semester *18 Credits*
PETE 407 — Production Engr. & Lab 4
PETE 421 — Subsurface Engineering 3
PETE 431 — Natural Gas Engineering 2
PETE 476 — Reservoir Engineering 3
*Engineering Elective (e.g. ME 416 or ES 307) 3
*Technical Elective (e.g. CE 603 Arctic Engr.) 3

Spring Semester *16 Credits*
PETE 456 — Pet. Eval. and Econ. Dec 3
PETE 466 — Petroleum Recovery Meth 3
PETE 478 — Well Test Analysis 2
PETE 489 — Reservoir Simulation 2
Perspectives on the Human Condition 4

Notes:
[1] GEOS 101 may be taken in a fall semester in place of GE 261.
* As approved by advisor.

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

(907) 474-7398

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:
36 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 486 — B.A. Thesis in Philosophy	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
PHIL 381 — Topics in Logics	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 485 — Topics in Comparative Philosophies	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 485 — Topics in Comparative Philosophies	3

Physical Education

College of Liberal Arts
Department of Physical Education

(907) 474-7382

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 103X or 104X — Basic General Chemistry/Beginnings in Biochemistry	4
BIOL 111-112 — Human Anatomy and Physiology I and II	8
MATH 107 — Elementary Functions or MATH 161 — Algebra for Business and Economics	3

3. Complete the following program (major) requirements:
Required Courses (22 Credits)

PE 205 — Introduction to the Human Movement Sciences	2
PE 232 — Analysis of Human Movement	3
PE 246 — Advanced First Aid	3
PE 316 — Motor Development	3
PE 405 — Concepts and Design of Physical Fitness Activities	2
PE 421 — Physiology of Exercise	4
PE 432 — Biomechanics of Physical Performance	4
PE 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.

PE 211 — Fundamentals of Softball	1
PE 212 — Fundamentals of Basketball	1
PE 213 — Fundamentals of Ice Sports	1
PE 214 — Fundamentals of Snow Sports	1
PE 215 — Fundamentals of Volleyball	1
PE 216 — Fundamentals of Rhythms	1**
PE 217 — Fundamentals of Recreational Activities	1**
PE 218 — Fundamentals of Soccer	1
PE 219 — Fundamentals of Aquatics	1
PE 220 — Fundamentals of Wrestling	1
PE 221 — Fundamentals of Gymnastics	1**
PE 222 — Fundamentals of Track and Field	1**

Elective Courses (select a minimum of 4 courses.)

PE 300 — Advanced Techniques of Gymnastics	1
PE 302 — Advanced Techniques of Basketball	1
PE 303 — Advanced Techniques in Ice Sports	1
PE 304 — Advanced Techniques in Snow Sports	1
PE 305 — Techniques in Volleyball	1
PE 306 — Techniques in Teaching Creative Dance	1**
PE 307 — Techniques in Camping and Outdoor Recreation	1**
PE 308 — Techniques in Track and Field	1
PE 309 — Aquatics Instructor	2
PE 310 — Techniques in Teaching Folk and Square Dance	1

Elective Courses (select a minimum of 7 credits)

PE 317 — Motor Learning	3
PE 321 — Practicum in Physical Education	1*
PE 327 — Movement Activities for Children	2*
PE 401 — Theory of Basketball	2
PE 406 — Methods of Teaching P.E.	3*
PE 411 — Sports & Physical Activity in American Society	3**
PE 412 — Principles and Problems in Athletic Coaching	3
PE 425 — Administration of P.E. and Athletics	3*
PE 440 — Prevention and Care of Athletic Injuries	3
PE 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:

PE 321	— Practicum in Physical Education	1
PE 327	— Movement Activities for Children	2
PE 406	— Methods and Materials in Teaching P.E	3
PE 425	— Administration of P.E. and Athletics	3
PE 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:

PE 306	— Techniques in Teaching Creative Dance	1
PE 307	— Techniques in Camping and Outdoor Recreation	1
PE 321	— Practicum in Physical Education	2*
PE 327	— Movement Activities for Children	2
PE 406	— Methods of Teaching Physical Education	3
PE 411	— Sports and Physical Activity in American Society	3
PE 425	— Administration of P.E. and Athletics	3
PE 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 completion of either the elementary or secondary certification program through the Department of Education, including ED 454: Student Teaching K-12.

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.

Physical Therapy

Pre-Professional Program

(907) 474-6396

Physical therapy is a health profession dedicated to the promotion of health, the prevention of disease, and to providing the assessment, evaluation and rehabilitation of the muscular, skeletal, and nervous systems after injury or disease. Typically, physical therapists work in rehabilitation units in hospitals, in conjunction with orthopedic practices, in private rehabilitation practices, and in sports medicine clinics. Along with delivering physical rehabilitation, many also serve as administrators, researchers and educators.

Physical therapy education typically consists of a program two years in length. Some programs lead to a bachelor's degree, others offer a certificate, while still others lead to a master's degree. The trend across the nation is towards the latter and requires completion of a bachelor's degree prior to admission. As with most health care professions, the first half of the training consists of classroom instruction, with the second emphasizing clinical practice. After completion of programs accredited by the American Physical Therapy Program, students are eligible to test for licensure in all 50 states.

Acceptance to physical therapy programs is very competitive and is based upon several factors. Included are overall academic achievement (most requiring a 3.0 gpa minimum), achievement in foundational sciences, and work experience in health-care situations. Graduate programs usually require the Graduate Record Examination and/or the Miller Analogies Test. UAF does not prescribe a specific major for pre-physical therapy students. Rather, students complete a series of courses which are required for admission to most programs: physics (PHYS 103X, 104X), anatomy and physiology (BIOL 111, 112), and statistics (STAT 301). Careful planning is necessary as course requirements over and above these differ between schools.

Students considering a career in physical therapy should contact the Academic Advising Center. There, students will be assigned an advisor to assist with program planning, exploration of professional schools and licensing requirements.

Physics

College of Natural Sciences
Department of Physics

(907) 474-7339

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 211X-212X — General Physics	8
PHYS 213 — Elementary Modern Physics	3

Complete a minor in mathematics, which includes MATH 200-201-202, and six 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 111X — Methods of Written Communication	3
MATH 200 — Calculus	4
CHEM 105 — General Chemistry	4
BIOL 105X or GEOL 101X	4
PHYS 113 — Concepts of Physics	1

Spring Semester	*18 credits*
SPC 131X or 141X — Fundamentals of Oral Communication	3
PHYS 211 — General Physics	4
MATH 201 — Calculus	4
CHEM 106 — General Chemistry	4
ES 201 — Computer Techniques	3

Second Year

Fall Semester	*18 credits*
MATH 202 — Calculus	4
PHYS 212 — General Physics	4
ENGL 211X — Intermediate Exposition with Modes of Literature or ENGL 213X — Intermediate Exposition	3
GEOL 101X or BIOL 105X	4
Perspectives on the Human Condition	3

Spring Semester	*16 credits*
MATH 302 — Differential Equations	3
PHYS 213 — Elementary Modern Physics	3

Perspectives on the Human Condition 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
Perspectives on the Human Condition 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
Perspectives on the Human Condition 3

Fourth Year
Fall Semester *16 credits*
PHYS 411 — Modern Physics 4
PHYS 313 — Thermodynamics 4
PHYS 462 — Optics 4
ES 307 — Elements of Electrical Engineering 3
Free elective 1

Spring Semester *17 credits*
PHYS 412 — Modern Physics 4
PHYS 445 — Solid State Physics 4
ES 308 — Instrumentation and Measurement 3

MINOR in Physics:
A minor in Physics requires 20 credits: PHYS 103X-104X or PHYS 211-212 and 12 credits selected from PHYS 213 and any 300-400 level course.

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

(907) 474-7609

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 200 — Principles of Economics
(may substitute another economics course for ECON 200 on the recommendation of adviser) 4
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 PS 101 including:
Three Credits in Policy and Administration from:
PS 102 — Introduction to American Government and Politics 3
PS 210 — Alaska Government and Politics 3
PS 211 — State and Local Government 3
PS 212 — Introduction to Public Administration 3
PS 263 — Alaska Native Politics 3

Six Credits in Comparative Politics as follows:
PS 201 — Comparative Politics: Western Political Systems 3
Choose one of the following:
PS 202 — Comparative Politics: Non-Western Political Systems and Structures 3
PS 310 — The Politics of Post-Industrial States 3
PS 311 — Government and Politics of the Soviet Union and Eastern Europe 3
PS 312 — Government and Politics of China and East Asia 3

Six Credits in International Politics from:
PS 321 — International Politics 3
PS 322 — International Relations 3
PS 437 — American Foreign Policy 3
PS 480 — The United Nations, Model United Nations and International Administration 1-3
PS 481 — Geopolitics and the International Environment 3

Three credits in Law and National Government Institutions from:
PS 301 — American Presidency 3
PS 302 — Congress and Public Policy 3
PS 435 — The Supreme Court and Judicial Process 3
PS 436 — The Courts and Civil Liberties 3

Six credits in Political Theory from:
PS 315 — American Political Thought 3
PS 411 — Classical Political Theory 3
PS 412 — Modern Political Theory 3
PS 415 — Contemporary Political Theory 3

Six credits in Political Behavior as follows:
PS 222 — Research Methods 3
Choose one of the following:
PS 401 — Political Behavior: Organizations 3
PS 402 — Political Behavior: Individuals 3
PS 403 — Public Policy 3

MINOR in Political Science
A minor in Political Science requires 15 credits distributed as follows:

Credits
PS 101 — Introduction to American Government and Politics 3
Three credits in policy and administration from the following:
PS 102, 210, 211, 212, or 263 3
Three credits in comparative politics from the following:
PS 201, 202,310, 311, or 312 3
Three credits in international politics from the following:
PS 321, 322, 437, 480 or 481 3
Three credits in political theory from the following:
PS 315, 411, 412, or415 3

Psychology

College of Rural Alaska
Department of Behavioral Sciences and Human Services

(907) 474-7240

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

(907) 474-7119

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

College of Rural Alaska
Department of Rural Development

(907) 474-6432

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 with a maximum of 6 credits in humanities and 6 credits in social sciences 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 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.
NRM 101 — Conservation of Natural Resources 3
NRM 251 — Introduction to Forest Systems 3
NRM 380 — Soils 3
NRM 401 — Natural Resources Legislation 3
NRM 430 — Land Use Planning 3
NRM 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
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
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 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 3
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
ED 311 — Intro to Instructional Techniques 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
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
SPC 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:

Russian Studies 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 302 — 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 487 — Translation (3 cr.)	6

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
PS 202 — Comparative Politics: Contemporary Doctrines and Structures....3
PS 321 — International Politics....3
PS 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 Russian Studies core courses and approved by the program adviser.

Science Management

School of Engineering
Department of Engineering and Science Management

(907) 474-6121

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

College of Rural Alaska
Department of Behavioral Sciences and Human Services

(907) 474-7240

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. A major emphasis is the preparation of the student for beginning social work practice with rural and Alaska Native populations.

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 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 356 — 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 B.A. general degree requirements where applicable.

Sociology

College of Rural Alaska
Department of Behavioral Sciences and Human Services

(907) 474-7240

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 B.A. general degree requirements where applicable.
**Courses from this group not used toward the major may be applied toward B.A. 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

(907) 474-7339

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 Communication

(907) 474-6591

Degree: B.A.
Minimum Requirements for Degree: 130 credits

Course work 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 two Fundamentals of Oral Communication courses required in the Core Curriculum. The course completed as part of the Core Curriculum 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	
SPC 131 — Fundamentals of Oral Communication-Group Context	3
SPC 141 — Fundamentals of Oral Communication-Public Context	3
200 Level	
SPC 222 — Fundamentals of Interpersonal Communication	3
SPC 225 — Listening and Interviewing	3
SPC 231 — Business and Professional Communication	3
SPC 251 — Argumentation and Debate	3
SPC 261 — Oral Interpretation	3
300 Level*	
SPC 320 — Communication and Language	3
SPC 321 — Nonverbal Communication	3
SPC 330 — Intercultural Communication	3
SPC 331 — Advanced Group Communication	3
SPC 335 — Organizational Communication	3
SPC 342 — Advanced Public Speaking	3
SPC 351 — Communication and Women	3
SPC 352 — Family Communication	3
400 Level*	
SPC 401 — Communication Research Methods	3
SPC 422 — Interpersonal Communication	3
SPC 425 — Communication Theory	3
SPC 441 — Persuasion	3
SPC 443 — Rhetorical Theory	3
SPC 475 — Speech Communication in Education and Training	3
SPC 482 — Seminar in Speech Communication	3

3. Minimum credits required 130

*With approval of advisor, an appropriate level Speech Communication course not listed in this group may be used to meet 3 credits of 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. Up to 6 credits used to fulfill minor requirements may be used at the same time to fulfill major or general distribution requirements. 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

(907) 474-7332

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 major requirements:

A. Statistics Core *28 Credits*

MATH 202 — Calculus 4
MATH 371 — Probability 3
MATH 408 — Mathematical Statistics 3
CS 103 — Intro. to Computer Programming
or any higher level CS course 3
STAT 200 — Elementary Probability and Statistics 3
or STAT 300 — Statistics 3
STAT 351 — Statistical Computing Packages 2
STAT 401 — Analysis of Experimental Design and Regression 4
STAT 402 — Scientific Sampling 3
STAT 498 — Senior Project 3

B. Electives in the Major

Choose two of the following: *6 Credits*

STAT 461 — Applied Multivariate Statistics 3
MATH 307 — Discrete Mathematics 3
MATH 310 — Numerical Analysis 3
MATH 314 — Linear Algebra 3
MATH 401 — Advanced Calculus I 3
MATH 402 — Advanced Calculus II 3
MATH 460 — Mathematical Modeling 3
STAT, MATH or statistical discipline oriented course approved by the statistics program chairperson 3

C. Area of Application* *24 Credits*

Complete a minimum of 24 credits, including at least 6 upper division, in a single discipline in which a UAF Bachelor's Degree is offered. Joint approval in writing is required from the department head in the area of application and the statistics adviser.**

3. Minimum credits required 120

**Examples of programs for areas of application for computer science, biology, wildlife, geology, natural resource management, and economics are available. Other areas of application are available.

A mathematics minor is completed by all statistics majors.

A Statistics/Math double major may be obtained by taking the following in addition to Items 1 and 2A above: MATH 215, 292, 308, 314, 401, and complete 12 additional credits in upper division math or statistics.

A math elective package is MATH 371 and 408, STAT 204, 351, and 401 plus 6 credits upper division MATH or STAT. The statistics elective package is MATH 314 and 401. Total credit hours = 60 including MATH 200-201.

Other double majors are available.

Minor in Statistics:

Complete the following:

STAT 200 — Elementary Probability and Statistics
or STAT 300 — Statistics 3
STAT 401 — Experimental Design and Regression 3
MATH 371 — Probability 3
MATH 408 — Mathematical Statistics 3
And complete 3 credits of approved MATH, STAT or STAT related course work (e.g., BA 360, BA 684, GEOS 430, ECON 326, ANTH 421, MATH 460, etc.) 3

Fisheries majors selecting the research option need only complete MATH 371 and 408 in addition to their fisheries requirements to obtain a minor in statistics.

Wildlife majors selecting the research option need only complete MATH 371 and 408 and STAT 401 in addition to their wildlife requirements to obtain a minor in statistics.

*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 Theater

(907) 474-7751

Degree: B.A.
Minimum Requirements for Degree: 130 credits

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:
ART 261 — History of World Art
ART 262 — History of World Art
MUS 123 — Experiencing Music
MUS 124 — Music in World Cultures 3

***5.** A minimum of one course from:
ART 105 or 106 — Beginning Drawing
JB 215 — Audio Production
JB 316 — Television Production
ES 101 — Graphics (2 cr.)
PER 100 — Modern Dance, Fencing, Gymnastics (1 cr. each)
SPC 261 — Oral Interpretation
SPC 211 — Voice and Diction
FL 110 — Pronunciation of French, German, Italian and Spanish 2-3

6. A minimum of two courses from:
Additional course(s) from 1,2, and 3 above
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 6

7. Minimum credits required..... 130

*May be used to meet B.A. 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..... 3
THR 211 — Theater Appreciation..... 3
THR 241 — Basic Stagecraft..... 3

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.

Veterinary Medicine

Pre-Professional Program

(907) 474-6396

Veterinary medicine is concerned with two primary health areas. The first is animal health which involves diagnosis, prognosis, therapy and prevention of animal health problems. The second is public health which involves protection of the public from animal borne disease, with methods such as food safety inspection. Veterinarians can also be found in the fields of research and education.

Generally, four-years of graduate level study are required for completion of a professional program in veterinary medicine. Classroom instruction and laboratory work provide the student with a solid foundation during the first three years of study. The final year of professional study is comprised of clinical rotations. Specialization within veterinary medicine is possible after further study at the post-doctoral level.

While a bachelor's degree is not required for admission into veterinary school, most entering students have completed a four-year undergraduate degree. Veterinary schools will consider applications from students from all disciplines provided specific course requirements have been met. Since these course requirements may vary somewhat with each school, it is recommended that students check the requirements of the school they are interested in. In general, pre-veterinary students should include the following courses in their studies at UAF: inorganic chemistry (CHEM 105X, 106X), organic chemistry (CHEM 321, 322, 324), biochemistry (CHEM 451, 452), biology (BIOL 105X, 106X, 342, 362, 418), mathematics (STAT 301), and physics (PHYS 103X, 104X).

Admission to veterinary school is based on the strength of one's undergraduate academic record, plus test scores on either the Veterinary College Admissions Test (VCAT) or the Graduate Record Exam (GRE). In addition, veterinary medicine exposure and experience is highly recommended.

Advisement for students considering veterinary medicine as a career choice is available through the Academic Advising Center.

Welding

School of Career and Continuing Education
Department of Trade and Industry

(907) 474-5264

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. A student may request credit by examination for any WMT class. See the department for details..

Wildlife Management

College of Natural Sciences
Department of Biology and Wildlife

(907) 474-7671

Degrees: B.S., M.S.
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 and B.S. degree requirements, completing SPC 141X as part of the core.
2. Complete the following program (major) requirements:

Courses	Credits
NRM 101 — Natural Resources Cons. and Policy	3
NRM 380 — Soils	3
NRM 400 — Natural Resource Policies	3
WLF 420 — Wildlife Policy and Administration	3
STAT 300 — Elementary Probability and Statistics	3
STAT 402 — Scientific Sampling	3
BIOL 105X-106X — Fundamentals of Biology	8
BIOL 205 — Vertebrate Anatomy or BIOL 317 — Comp. Anatomy	4
*BIOL 210 — Animal Physiology	4
*BIOL 239 — Introduction to Plant Biology	4
BIOL 271 — Principles of Ecology	4
BIOL 331 — Systematic Botany	4
BIOL 362 — Principles of Genetics	4
BIOL 425 — Mammalogy	3
BIOL 426 — Ornithology	3
BIOL 471 — Population Ecology	3

CHEM 105X-106X — General Chemistry 8
ENGL 314 — Technical Writing
or ENGL 414 — Research Writing 3
MATH 272-273 — Introduction to Calculus for the Life Sciences 6
PHYS 103X — College Physics 4
WLF 101 — Survey of Wildlife Sciences 1
WLF 201 — Wildlife Management Principles 3
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
CS 103 — Intro to 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 4
BIOL 472 — Communities and Ecosystems 2

Complete sufficient electives to bring total to 130 credits.
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 and B.S. degree requirements, completing SPC 141X as part of the core.
2. Complete the following program (major) requirements:

Courses	Credits
NRM 101 — Natural Resources Cons. and Policy	3
NRM 380 — Soils	3
NRM 400 — Natural Resource Policies	
WLF 420 — Wildlife Policy and Administration	3
NRM 430 — Land-Use Planning	3
STAT 300 — Elementary Probability and Statistics	3
STAT 402 — Scientific Sampling	3
BIOL 105X-106X — Fundamentals of Biology	8
BIOL 205 — Vertebrate Anatomy	4
*BIOL 210 — Animal Physiology	4
*BIOL 239 — Introduction to Plant Biology	4
BIOL 271 — Principles of Ecology	4
BIOL 331 — Systematic Botany	4
BIOL 362 — Principles of Genetics	4
BIOL 425 — Mammalogy	
or BIOL 426 — Ornithology	3
BIOL 471 — Population Ecology	3
CHEM 105X-106X — General Chemistry	8
ECON 235 — Introduction to Natural Resource Economics	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
WLF 101 — Survey of Wildlife Sciences	1
WLF 201 — Wildlife Management Principles	3
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:
NRM 460 — Principles Outdoor Recreation Management 3
NRM 450 — Forest Management 3
NRM 370 — Introduction to Watershed Science 3

3. At least 2 of the following courses must be included:
WLF 417 — Wildlife Management — Forest and Tundra 2
WLF 419 — Waterfowl and Wetlands Ecology and Management 4
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. 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

(907) 474-7542

Degrees: M.S.
Minimum Requirements for Degrees: M.S. — 30 additional credits

For complete information on the graduate programs in zoology, see the UAF Graduate Catalog.

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 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.

Courses with a suffix of "X" (ENGL 111X, MATH 131X) meet specific baccalaureate core requirements. Courses with suffixes of "w" or "o" meet upper-division writing intensive or oral communication intensive course requirements for the baccalaureate core.

Course Credits

One credit represents satisfactory completion of 840 minutes of lecture or 1680 or 2520 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, Humanities Elective, etc.) are identified in the course description section of this catalog by the following designators:

h — Humanities	s — Social Science
m — Mathematics	n — Natural Science

For example, HIST 341, History of Alaska (3+0)s may be utilized to satisfy the "social science elective" requirement.

Special topics courses are not given course classifications.

The Baccalaureate Core

Courses that may be used to satisfy general baccalaureate core requirements have course numbers ending with "X". For example, English 111X, Speech Communication 141X, and other such courses meet specific core requirements. See the baccalaureate core requirements for a listing of other specific courses.

Courses meeting the upper division writing intensive and oral communication intensive requirements for the baccalaureate core are indentified in the course description section of the catalog with the following designators:

o — Oral Communication Intensive Course
w — Writing Intensive Course

Note: Courses designated as meeting "w" or "o" requirements for the baccalaureate core *may not* meet written or oral communication requirements for degree requirements in effect prior to the fall of 1991.

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.



Erika Van Flein does her accounting homework by preparing her worksheet for tomorrow's class.

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, Spring
Elementary Accounting (3+0)
Accounting concepts and procedures for service businesses and for merchandising businesses owned by a single proprietor. Also available via Independent Learning.

ACCT 102 3 Credits Fall, Spring
Elementary Accounting (3+0)
Accounting concepts and procedures for businesses organized as partnerships or corporations and performing manufacturing operations. Also available via Independent Learning. (Prerequisite: ACCT 101.)

ACCT 303 3 Credits Fall, Spring
Governmental Accounting (3+0)
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)
Federal and state income taxes primarily for Alaska residents. Introduction to corporate income taxation. Tax reporting, planning, and research. (Prerequisite: ACCT 102 or permission of instructor.)

ACCT 323 3 Credits As Demand Warrants
Petroleum Accounting (3+0)
Financial reporting and accounting for the petroleum industry. Emphasis on 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)
Cost accounting with managerial emphasis 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. For accounting majors. (Prerequisite: ACCT 102.)

ACCT 352 3 Credits Fall, Spring
Management Accounting (3+0)
Business policy profit planning, resource planning, control concepts, reporting for management control, and impact of public reporting on management decisions. (Prerequisites: ACCT 101, ACCT 102.)

ACCT 361 3 Credits Fall
ACCT 362 3 Credits Spring
Intermediate Accounting (3+0)
Balance sheet accounts and procedures for analysis and correction. Working capital and fixed assets emphasized fall semester. Long-term liabilities and stockholders' equity emphasized spring semester. (Prerequisite: ACCT 102.)

ACCT 401W 3 Credits Fall
Advanced and International Accounting (3+0)
Accounting for parent-subsidiary relationships, partnerships, and fiduciaries. International accounting in multi-national enterprises emphasized. (Prerequisite: ACCT 362.)

ACCT 403 3 Credits Spring
Advanced Taxes (3+0)
Federal income tax for all entities. Gift, estate, and payroll taxes. Tax research, planning, and reporting for domestic and foreign taxpayers. (Prerequisite: ACCT 310.)

ACCT 404 3 Credits Fall
Advanced Cost Accounting and Controllership (3+0)
Controllership function in contemporary organizations and related reporting requirements. Managerial considerations related to contemporary organizations. (Prerequisites: AIS 316, ACCT 342, 362; BA 325, 360.)

ACCT 405 3 Credits Spring
Contemporary Issues in Accounting (3+0)
Current developments in financial and managerial accounting theory and research. Relevant court cases, SEC rulings, FASB and AICPA publications. Academic accounting research. (Prerequisite: ACCT 401.)

ACCT 452 3 Credits Fall
Auditing (3+0)
Procedures for verification of financial data. Professional standards applicable to the auditor's examination and opinion of financial statements. (Prerequisite: ACCT 362.)

ACCT 471 3 Credits As Demand Warrants
Tax Planning and Research (3+0)
Tax planning and research for business organizations. Tax planning for estates, trusts, and individuals. For tax practitioners and 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)
Advanced auditing theory and practice. Audit techniques and internal control of computer systems. For auditor practitioners and students without field experience in auditing. Materials fee: $20.00. (Prerequisites: AIS 316, ACCT 452. Course assumes prior exposure to auditing and information systems.)

ACCT 473 3 Credits Fall
Applied Systems Design (3+0)
Development and implementation of a computer-based accounting information system for a small business or not-for-profit entity. Materials fee: $20.00. (Prerequisites: AIS 316, ACCT 342 or 352.)

ACCT 481 1 Credit As Demand Warrants
Personal Tax Planning (1+0)
Provisions of tax law affecting the individual taxpayer. Not a tax preparation course. (Prerequisites: Upper division standing, permission of instructor.)

ACCT 482 1 Credit As Demand Warrants
Business Tax Planning (1+0)
Applicable tax credits, business deductions, profit sharing plans, and various state taxes. Not a tax preparation course. (Prerequisite: Upper division standing or permission of instructor.)

ACCT 483 1 Credit As Demand Warrants
Estate Tax Planning (1+0)
Gift, estate, and social security taxes. (Prerequisite: Upper division standing or permission of instructor.)

ACCT 602 3 Credits Spring
Financial Accounting Concepts for Administrators (3+0)

ACCT 650 3 Credits Spring
Management Accounting Seminar (3+0)

Accounting and Information Systems

AIS 101 3 Credits Fall, Spring
Computer Literacy (3+0)
Concepts, skills and software required for today's business education; study of selected current business software applications. Materials fee: $25.00. (Prerequisite: Placement in MATH 107/161 or completion of MATH 161.)

AIS 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: AIS 101 or permission of instructor. Next offered: 1991-92.)

AIS 310 3 Credits Fall, Spring
Introduction to Management Information Systems (3+0)
The role of information technology in organizations and its impact on management and strategic issues. Materials fee: $20.00. (Prerequisite: AIS 101.)

AIS 312 3 Credits Spring
Information Systems Technology (3+0)
Introduction to the hardware and systems software underlying information systems; provides background to understand computer marketing literature and to select among technology alternatives. Materials fee: $20.00

AIS 316 3 Credits Spring
Accounting Information Systems (3+0)
Accounting systems for business entities in various industries. Internal control for the business, data processing and its relationship to accounting systems. Materials fee: $20.00. (Prerequisites: ACCT 101 and 102.)

AIS 410 3 Credits Fall
Systems Analysis and Program Design (3+0)
The system development lifecycle for database-oriented information systems in both mainframe and microcomputer environments. Includes programming in one or more fourth generation languages and a term project. Materials fee: $20.00. (Prerequisites: AIS 310, 312, 316.)

AIS 412W 3 Credits Spring
Planning, Administration and Control Information Systems (0+6)
Overview of what a manager needs to know to administer an information systems department, including extensive discussions of current trends in management of IS and the IS industry. Materials fee: $10.00 (Prerequisite: AIS 410.)

AIS 414 3 Credits Spring
Database Design for Management Information (3+0)
Combines advanced systems analysis using modern techniques of data modelling with study of management and administrative problems in coordination and management of organization data resources; focusing on needs of medium- sized and large organizations. Materials fee: $20.00 (Prerequisite: AIS 410 or CS 401.)

AIS 473 3 Credits Spring
Applied System Design (3+0)
Application of systems analysis and computer skills to build accounting oriented transaction-processing systems. Materials fee: $20.00 (Prerequisite: AIS 410; concurrent enrollment in AIS 414 or CS 425.)

AIS 605 3 Credits Fall
Management Information Systems (3+0)

Airframe and Powerplant

AFPM 111 3 Credits As Demand Warrants
General Airframe and Powerplant (4+0)
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. Preparation for the FAA Mechanics Airframe Structures Written, Oral and Practical Exam. Materials fee: $20.00. (Prerequisite: Experience requirements of FAR 65.77 or permission of the instructor.)

AFPM 145 1 Credit As Demand Warrants
Basic Mathematics (1+0)
Review of applied and technical mathematics related to the construction of aircraft and their engines. Common and decimal, fractions and mixed numbers; extracting square roots and raising numbers to a given power; solving ratios, proportions and percentage problems; fundamental algebraic operations. (Prerequisite: Admission to A & P Program or permission of instructor.)

AFPM 146 2 Credits As Demand Warrants
Basic Electricity (2+0)
Electrical theory and concepts for the aviation mechanic. 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 (.5+0)
Applications of mechanics; levers, sound, fluid and heat dynamics. Basic aircraft structures and aerodynamics. (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 (1+0)
Basic drafting. Drawings, symbols and schematic diagrams, sketches of repairs and alterations, 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 (.5+0)
Rigid and flexible fluid lines and fittings, 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)
Basic shop practices, including selection, identification and installation of aircraft hardware and materials, precision measuring tools and operations, basic heat treating processes, 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)
Basic aircraft cleaning materials, methods, and corrosion control. (Prerequisite: Admission to A & P Program or permission of instructor.)

AFPM 152 1 Credit As Demand Warrants
Federal Aviation Regulations (1+0)
Federal Aviation Regulations for maintenance of aircraft. Maintenance forms and records, publications, 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)
Weighing procedures, weight, arms, moments, center of gravity computations, and placarding. Aircraft loading, required forms, weighing. (Prerequisite: Admission to A & P Program or permission of instructor.)

AFPM 154 0.5 Credits As Demand Warrants
Ground Operations and Servicing (.5+0)
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)
Aircraft wood, dope, fabric finishes, welding, sheet metal, assembly and rigging and inspection. Preparation for the FAA Mechanics Airframe Structures Written, Oral and Practical Exam. Materials fee: $20.00. (Prerequisite: 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)
Aircraft electrical, hydraulic and pneumatic systems. Landing gear, instruments, fuel, communication and navigation, cabin atmosphere control, and fire protection systems. Inspection, checking, troubleshooting, repair and servicing. Preparation for the FAA Mechanics Airframe Structures Written, Oral and Practical Exam. Materials fee: $20.00. (Prerequisite: 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. Inspecting turbo jets, turbo shaft, and turbo fan engines. Overhaul, inspection, and fundamentals of reciprocating engines. Preparation for the FAA Mechanics Airframe Structures Written, Oral and Practical Exam. Materials fee: $20.00. (Prerequisite: Experience requirements of FAR 65.77 or permission of the instructor.)

AFPM 216 3 Credits As Demand Warrants
MOS Powerplant System/Components (3+0)
Fuel metering, induction systems, propellers, control systems, and powerplant electricity. Repair, inspection, service and troubleshooting. Preparation for the FAA Mechanics Airframe Structures Written, Oral and Practical Exam. Materials fee: $20.00. (Prerequisite: Experience requirements of FAR 65.77 or permission of the instructor.)

AFPM 230 2.5 Credits As Demand Warrants
Aircraft Electrical Systems (2.5+0)
Wiring, control, indication, and protection devices for AC and DC systems. Inspection, troubleshooting service and repair of these systems. 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 (1.5+0)
Installation, inspection, testing, servicing engine electrical system wiring, controls, indicator and protective devices. Repair and service of electrical generating systems. Materials fee: $15.00.

AFPM 235 5 Credits As Demand Warrants
Aircraft Reciprocating Engines (5+0)
History and development of the aircraft reciprocating engine. Repair, overhaul, and inspection of various types of engines. Operation and troubleshooting of engines. Materials fee: $120.00.

AFPM 240 1.5 Credits As Demand Warrants
Turbine Engines (1.5+0)
Development, theory and operation. Engine design, performance, accessories and subsystems. Engine maintenance and overhaul.

AFPM 244 1.5 Credits As Demand Warrants
Lubricating Systems (1.5+0)
Identification and selection of lubricants for aircraft powerplants. Inspection, service, troubleshooting and repair of the lubrication systems and 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 (2.5+0)
Overhaul, inspection and troubleshooting of reciprocating and gas turbine ignition systems. 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 (1.5+0)
Fundamental operation of systems in aircraft powerplants. Technical data to repair and overhaul carburetors and components. 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 (.5+0)
Operation and service of aircraft induction, preheat, anti-ice and super charger systems.

AFPM 249 0.5 Credits As Demand Warrants
Powerplant Cooling Systems (.5+0)
Inspection, service and repair of engine cooling systems - both air and liquid cooled installations. (Prerequisite: Admission to A & P Program or permission of instructor.)

AFPM 250 0.5 Credits As Demand Warrants
Powerplant Exhaust Systems (.5+0)
Inspection, service and repair of engine exhaust systems. Includes operations of turbo compounded engines, thrust reversers, and noise suppressors. (Prerequisite: Admission to A & P program or permission of instructor.)

AFPM 251 1.5 Credits As Demand Warrants
Fuel Systems (1.5+0)
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. 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 (.5+0)
Aircraft speed and takeoff warning and anti-skid braking systems. Inspection, troubleshooting, service and repair. (Prerequisite: Admission to A & P program or permission of instructor.)

AFPM 254 0.5 Credits As Demand Warrants
Ice and Rain Control Systems (.5+0)
Inspection, operation and troubleshooting of de-ice and anti-ice systems.

AFPM 255 0.5 Credits As Demand Warrants
Fire Protection Systems (.5+0)
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 (.5+0)
Operation of aircraft avionics, autopilots and antennas, including inspection and installation.

AFPM 257 0.5 Credits As Demand Warrants
Instrument Systems (.5+0)
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. Operation, inspection, troubleshooting, service and repair.

AFPM 259 1.5 Credits As Demand Warrants
Hydraulic and Pneumatic Systems (1.5+0)
Operation of systems and uses in aircraft. Identification of hydraulic fluids, seals, hydraulic and pneumatic control devices, inspection and servicing, and troubleshooting.

AFPM 260 2 Credits As Demand Warrants
Aircraft Landing Gear Systems (2+0)
Simple and complex systems. Operation, service and repair of mechanical and hydraulic retraction mechanisms. 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 (.5+0)
Inspection, service and repair. Woods, glues, patching and splicing. 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 (.5+0)
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
Aircraft sheet metal fabrication, inspection and repair including rivets and fasteners, repair of interiors and service of plastic, honeycomb and bonded structure. Materials fee: $85.00.

AFPM 265 1.5 Credits As Demand Warrants
Aircraft Welding
Contemporary welding methods on aircraft structures. Oxyacetylene, arc, inert gas and brazing techniques. Inspection of welded structure and safety procedures. Materials fee: $10.00-100.00.

AFPM 266 1.5 Credits As Demand Warrants
Assembly and Rigging
Aerodynamic theory and function of aircraft control surfaces. 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
Inspection and return of aircraft to service. Procedural and legal aspects of 100 hour, annual and periodic inspections. (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 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.)

AFPM 325 2 Credits As Demand Warrants
Inspection Authorization Preparation (1+2)
Technical background training for the working airframe and powerplant mechanic in selecting, reviewing, and utilizing the appropriate Federal Regulatory and Advisory information as well as the Manufacturer's Maintenance information to inspect and return to service aircraft, engines, propellers, appliances and related parts in accordance with FAR Part 65.95. Final exam is the FAA Inspection Authorization exam administered by an FAA Airworthiness Inspector. (Prerequisite: FAA A & P Certificate, meet additional requirements of FAR 65.91.)

Alaska Native Languages

ANL 108 1-3 Credits As Demand Warrants
Beginning Athabaskan Literacy (3+0) h
Introduction to reading and writing in one of the Athabaskan languages for native speakers.

ANL 141 3 Credits Fall
ANL 142 3 Credits Spring
Beginning Athabaskan — Koyukon or Kutchin (3+0) h
Introduction to Koyukon, the Athabaskan language of the Koyukuk and Central Yukon rivers, or Kutchin, the Athabaskan language of the Upper Yukon. Class will deal with one of these two languages. Literacy and grammatical analysis for speakers. For non-speakers, a framework for learning to speak, read, and write the language. (Prerequisite: ANL 141 for ANL 142 in the same language or permission of the instructor.)

ANL 150 1 Credit As Demand Warrants
Interpretive Communication (1+0) s
Communication processes in Yup'ik and English speaking cultures. Solutions to identify problem areas in cross-cultural communication. Situations such as conversations, meetings, translating and interpreting. 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) s
Understanding differences in cross-cultural interaction. Application of cross-cultural interactions to various communication settings. Concentrates on Yup'ik ways of communication.

ANL 208 1-3 Credits As Demand Warrants
Advanced Athabaskan Literacy (3+0) h
Expository and creative writing for native speakers; reading Athabaskan literature; elicitation, transcription, and editing of cultural materials from elders.

ANL 215 3 Credits Fall
Alaska Native Languages: Eskimo-Aleut (3+0) h
A survey of the Native languages of Alaska, particularly Eskimo-Aleut: 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; 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 or Kutchin (3+0) h
Continuation of beginning Athabaskan — Koyukon or Kutchin. One of these two languages will be taught. Development of conversational ability, additional grammar and vocabulary. (Prerequisites: ANL 141 and 142 in the same language, or permission of instructor.)

ANL 387 3 Credits As Demand Warrants
ANL 388 3 Credits As Demand Warrants
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)
Basis of concern over the relation of Alaska Natives to their land, the Land Claims movement, key issues; organizations involved. Current corporation structure - regional and village; current and future problems facing these groups, and strategies 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 of 1971. Historical overview of land claims of various tribes in the Lower 48 and in Alaska. Current status of regional, village and non-profit Native corporations. Future issues related to implementation of ANCSA. Also available via Independent Learning.

AKNP 212 1 Credit As Demand Warrants
Duties and Powers of Local Government (1+0)
Development, operation and improvement of local government in Alaska. Future of local government in bush Alaska. For citizen, practitioner and advocate.

AKNP 230 3 Credits As Demand Warrants
Federal Indian Law (3+0)
Principles of Federal Indian Law and the extent to which these principles apply to Alaska Natives. Foundation of principles that formed the bases of the relationship of the United States to the tribes and development of this relationship. Legal perspective and land issues. (Prerequisite: English placement test.)

AKNP 232 3 Credits As Demand Warrants
1991 and Beyond - Implications of ANCSA (3+0)
Specific provisions of the Alaska Native Claims Settlement Act as related to 1991. Acquisitions, takeovers of corporations, provisions in Sections 7(i), 7(j), 7(h), and 14(c), changes allowed under ANILCA and other amendments to the Act, the effect of ANCSA on the Indian Reorganization Act and the Indian Self-Determination Act, and land and stock status in the future. (Prerequisite: English Placement test.)

AKNP 233 1 Credit As Demand Warrants
Tribal Government Issues (1+0)
Tribal governments and related issues. Political status and lawmaking, judicial, and regulatory powers. Sovereignty, tribal enrollment and membership. Selected federal statutes and Indian Law affecting Alaska Native tribes. Potential role of tribal governments in planning for Alaska Natives' future defined and discussed.

Alaska Native Studies

ANS 101 3 Credits Fall
Introduction to Alaska Native Studies (3+0)
Introductory information on the Alaska Native Community. Overview of significant Native issues. Review of pertinent literature and resources.

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, Spring
Parliamentary Procedures (1+0)
(Same as PS 110)
Rules and principles of parliamentary procedure and application to group decision-making processes.

ANS 120 3 Credits Fall
Cultural Differences in Institutional Settings (3+0) s
The phenomena of culturally-organized thought processes. Communication patterns resulting from the interaction of peoples from different linguistic/culture traditions in modern institutional settings. Special attention 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 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 Theatre (3+0) h
(Same as THR 161)
Development and performance of original and traditional theatrical works derived from various Alaska Native cultural heritages and experiencs. This course is a prerequisite for ANS/THR 361, Advanced Tuma Theatre and for member ship in the Tuma Theatre touring company.

ANS 250 3 Credits Fall, 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, Spring
Practicum in Native Cultural Expression (0+variable)
Provides individual supervised activities in the formal organization, promotion, and expression of Alaskan Native cultural heritage. May be repeated to a maximum of 3 credits. (Prerequisite: Permission of the department head.)

ANS 268 3 Credits Fall, Spring
Beginning Native Art Studio (1+4) h
(Same as ART 268)
Understanding and applying the traditional designs and technologies of Native art. (Prerequisite: ART 105 or permission of instructor.)

ANS 300 3 Credits Alternate Spring
Rhetorical Expression of the Alaska Native Experience (3+0) h
Rhetorical methods of creative expression of the Alaska Native experience. Emphasis on the student's development of expressive abilities in a variety of Native and Western forms. Publication of student work a possibility. (Prerequisite: ENGL 111 and permission of instructor.)

ANS 310 3 Credits Fall
The Alaska Native Land Settlement (3+0) s
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, 137; or permission of instructor.)

ANS 315 3 Credits Alternate Spring
Tribal People and Development (3+0) s
(Same as RD 315)
Impact of socio-economic development processes on tribal peoples in third and fourth world societies. Implications of these processes for Alaska Native people. (Prerequisite: Junior standing or permission of the instructor. Next offered 1991-92.)

ANS 320 3 Credits Spring
Language and Culture: Applications of Alaska (3+0) s
(Same as ANTH 320)
Language, ethnicity, and their interrelationships. Communicating ethnic identity. Patterns of language use which affect communication between ethnic groups. 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)
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. 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: 1991-92.)

ANS 340 3 Credits Fall
Contemporary Native American Literature (3+0) h
(Same as ENGL 340)
Comtemporary Native American writing in English, including novels, short stories, poetry, and plays. Examples of Native American film when related to a writing. Works discussed in relation to cultural contexts and interpretations. (Prerequisite: ENGL 111 or permission of instructor.)

ANS 349 3 Credits Fall
Narrative Art of Alaska Native Peoples (in English Translation) (3+0) h
(Same as ENGL 349)
Traditional and historical tales by Aleut, Eskimo, Athabaskan, Eyak, Tlingit, Haida, and Tsimshian storytellers. Bibliography, Alaska Native genres and viewpoints, and structural and thematic features of tales. (Prerequisite: ENGL 111 or permission of instructor.)

ANS 351 1-3 Credits Fall, Spring
Practicum in Native Cultural Expression (0+variable)
Individual supervised activities in advanced organization, promotion, and expression of Alaskan Native cultural heritage projects (Festival of Native Arts leadership, Tuma Theatre, Theata magazine, etc.) Continuation of ANS 251. (Prerequisite: Permission of instructor.)

ANS 360 1 Credit Spring
Advanced Native Dance (0+2) h
Advanced techniques with emphasis on the cultural meanings of the dance performance. (Prerequisite: ANS 160 or permission of instructor.)

ANS 361 3 Credits Fall
Advanced Tuma Theatre (3+0) h
(Same as THR 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 either THR 221, 241, 343, 347 or permission of instructor.)

ANS 365 3 Credits Fall
Native Art of Alaska (3+0) h
(Same as ART 365)
Art forms of the Eskimo, Indian and Aleut from prehistory to the present. Changes in forms through the centuries. (Prerequisite: Advanced standing or permission of the instructor.)

ANS 366 3 Credits Alternate Spring
Northwest Coast Indian Art (3+0) h
(Same as ART 366)
Arts of the Northwest Coast Indians and the place of the art in their culture. (Next offered: 1991-92.)

ANS 367 3 Credits Alternate Spring
Eskimo Art (3+0) h
(Same as ART 367)
Eskimo art from Alaska, Canada and Siberia beginning with the earliest known pieces to the beginning of the 20th century. (Next offered: 1992-93.)

ANS 368 3 Credits Fall, Spring
Intermediate Native Art Studio (1+4) h
(Same as ART 368)
Understanding and applying advanced traditional designs and technologies of Native art. (Prerequisite: ART 268 or permission of instructor.)

ANS 375 3 Credits Alternate Spring
Native American Religion and Philosophy (3+0) h
Philosophical aspects of Native American world views. Systems of belief and knowledge, explanations of natural phenomena, relations of humans to natural environment through ritual and ceremonial observances. (Prerequisite: ANTH 242 or permission of the instructor; PHIL 201 is recommended. Next offered: 1991-92.)

ANS 401 3 Credits Fall, Spring
Cultural Knowledge of Native Elders (3+0) h
Study with prominent Native tradition-bearers in Native philosophies, values, and oral traditions. Traditional knowledge elicited through the cultural heritage documentation process. (Prerequisites: HIST 100 or ANTH 242 and upper division standing.)

ANS 420 3 Credits Fall
Alaska Native Education (3+0) s
(Same as ED 420)
School systems historically serving Native people, current efforts toward local control, and the cross cultural nature of this education. (Prerequisite: ANTH 242 or HIST 100; or permission of instructor.)

ANS 425 3 Credits Fall
Federal Indian Law and Alaska Natives (3+0) s
The "special relationship" between the federal government and Native Americans based on land transactions and recognition of tribal sovereignty. Federal Indian law and policy evolving from this relationship. Legal rights and status of Alaska Natives. (Prerequisites: PS 101 and HIST 100; or permission of instructor; PS 263 is recommended.)

ANS 450 3 Credits Alternate Spring
Comparative Aboriginal Rights and Policies (3+0) s
(Same as PS 450)
A case-study approach in assessing Aboriginal Rights and Policies in different Nation-State Systems. Seven Aboriginal situations examined for factors promoting or limiting self-determination. (Prerequisite: Upper division standing or instructor's permission. Next offered: 1991-92.)

ANS 468 3 Credits Fall, Spring
Advanced Native Art Studio (1+4) h
(Same as ART 468)
Advanced traditional designs and technologies of Native art. Use of contemporary materials to interpret traditional forms. (Prerequisite: ART 368 or permission of instructor.)

ANS 475 3 Credits Spring
Alaska Native Social Change (3+0) s
Tradition and change in Native social institutions in contemporary society. Methods of identifying and analyzing significant Native social change processes for public understanding. (Prerequisite: ANTH 242 or permission of the instructor.)

Alaska Studies

ALST 103A 1 Credit As Demand Warrants
Creative Response (1+0)
Samples of stories of indigenous people of Alaska. Reviews work of Native Alaskan artists. Examines music of Inupiat, Yup'ik and Koyukon cultures (songs and dances).

ALST 103B 1 Credit As Demand Warrants
The People (1+0)
Survey of social sciences in Alaska and relationships to Alaskan culture.

ALST 103C 1 Credit As Demand Warrants
The Land (1+0)
Geography and branches of earth science related to the land mass of Alaska. Current issues.

ALST 107 1 Credit As Demand Warrants
Land Resource Management (1+0)
Tools for overseeing land use and the political aspects of natural resource management.

American Sign Language

ASLG 101 3 Credits As Demand Warrants
American Sign Language I (3+0)h
Visual-gestural language used by most deaf Americans. Acquisition of receptive and expressive conversational skills. Cultural aspects of everyday life experiences of deaf people.

ASLG 110 1 Credit As Demand Warrants
American Sign Language Prac (1+0)h
Skill development in use of American Sign Language. Conducted entirely in sign language with aspects of deaf culture included. All skill levels.

ASLG 202 3 Credits As Demand Warrants
American Sign Language II (3+0)h
Expressive and receptive conversational skills. Understanding the culture that is an integral part of the language. Continuation of American Sign Language I. (Prerequisite: ASLG 101 or permission of instructor.)

ASLG 203 3 Credits As Demand Warrants
American Sign Language III (3+0)h
Grammar, conceptual structure, and lexical items of American Sign Language. Cultural awareness and expressive and receptive signing skills for communicating and understanding American Sign Language in diverse contexts. Continuation of ASLG 101 and 202. (Prerequisite: ASLG 202 or permission of instructor.)

ASLG 204 3 Credits As Demand Warrants
American Sign Language IV (3+0)h
Spontaneous and interactive use of American Sign Language. Grammar, structure, and lexical components. Cultural aspects supporting communication in American Sign Language at an advanced level. A continuation of ASLG 203. (Prerequisite: ASLG 203 or permission of the instructor.)

Anthropology

ANTH 100X 3 Credits Fall
Individual, Society and Culture (3+0) s
An examination of the complex social arrangements guiding individual behavior and common human concerns in contrasting cultural contexts.

ANTH 101 3 Credits Fall, Spring
Introduction to Anthropology (3+0) s
Human societies and cultures based on the findings of the four subfields of the discipline: archaeological, biological, cultural and linguistic. Also available via Independent Learning. Materials fee: $10.00.

ANTH 102 3 Credits Fall, Spring
Faces of Culture (3+0) s
Television-enhanced instruction in cultural anthropology. Methods, theories, fundamental concepts and foundations for understanding differences in cultures. Telecourse fee: $20.00.

ANTH 103 3 Credits Fall
Human Evolution and World Prehistory (3+0) s
Human evolution and cultural development on a global basis. Methods, concepts and theories which serve as the scientific foundation for archaeology and physical anthropology.

ANTH 104 3 Credits Alternate Fall
Social/Cultural Anthropology (3+0) s
Basic concepts and principles underlying anthropological study of society and culture. Emphasis on non-western ethnographic context. Open to majors and non-majors. (Next offered: 1992-93.)

ANTH 105 1 Credit As Demand Warrants
Introduction to the History and Culture of the Seward Peninsula (1+0)
(Same as HIST 105.)
Cultural history of the Seward Peninsula peoples for the last 10,000 years using physical anthropology, ethnography, ethnohistory, linguistics, archeology, ecology and climatology. Eskimo and Euroamerican cultures which have existed in western Alaska.

ANTH 111 3 Credits Alternate Spring
Ancient Civilizations (3+0) s
Major civilizations of the Old and New World from a comparative, anthropological perspective. Antecedents and influences of these civilizations on their neighbors. Economics, science, religion, and social organization of these civilizations. (Next offered: 1992-93.)

ANTH 123 3 Credits Alternate Fall
Origins of Alaska's Native Peoples (3+0) s
Origins and affinities of native Alaskan peoples from an archaeological perspective. Prehistory examination of Yup'ik, Inupiaq, Aleut, Tlingit, and Athabaskan groups. (Next offered: 1991-92.)

ANTH 203 3 Credits Every Third Spring
Women in Society (3+0) s
Examination of the nature of sex roles cross-culturally. History of the study of sex roles in anthropology. Current biological and cultural research and hypotheses in anthropology regarding male and female behavior. In-depth studies of cultures representing techno-environmental adaptation to hunting, horticultural, pastoral, agricultural, and industrial societies. (Next offered: 1991-92.)

ANTH 210 3 Credits Every Third Spring
New World Prehistory (3+0) s
Culture history of native Americans from earliest times (excluding Alaska and Canada) including those in Mexican and Peruvian states. (Prerequisite: ANTH 103 or 211 or permission of instructor. Next offered: 1991-92.)

ANTH 211 3 Credits Alternate Fall
Fundamentals of Archaeology (2+3) s
Methods and techniques of archeological field and laboratory research. Materials fee: $10.00. (Prerequisite: ANTH 103. Next offered: 1991-92.)

ANTH 212 3 Credits Alternate Spring
Old 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 103 or 211 or permission of instructor. Next offered: 1992-93.)

ANTH 230 3 Credits Fall
The Oral Tradition: Folklore and Oral History (3+0) h
Study and collection of folklore and oral history. Importance of oral tradition in human communication and the advantages and disadvantages of recording and studying it. Sociocultural anthropology and anthropological linguistics in relation to oral traditions. Methods of folklorists, historians and academicians. Field project required. (Prerequisite: ANTH 104.)

ANTH 242 3 Credits Spring
Native Cultures of Alaska (3+0) s
The traditional Aleut, Eskimo, and Indian (Athabaskan and Tlingit) cultures of Alaska. Eskimo and Indian cultures in Canada. Linguistic and cultural groupings, population changes, subsistence patterns, social organization and religion in terms of local ecology. Precontact interaction between groups. Also available via Independent Learning. Materials fee: $20.00

ANTH 250 2 Credits Fall, Spring
Archeological Laboratory Techniques (1+3)
Archeological laboratory procedures including lithic analysis and lithic tool typology. Examination of collections from several early man sites in Alaska. Research problems pertaining to those collections. (Prerequisite: Permission of instructor.)

ANTH 300 3 Credits Alternate Fall
Anthropology of Religion (3+0) s
Religion or supernatural belief from the perspective of anthropology. Religion in the context of "primitive" society as well as its role in complex society. 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 301 3 Credits Fall
World Ethnography (3+0) s
Cultural heritage, social systems, modes of economic adaptation and culture change for human populations in major geographic regions of the world. Culture areas covered different semesters are contingent on available faculty expertise. (Prerequisites: ANTH 104 and junior standing or permission of instructor.)

ANTH 305 3 Credits As Demand Warrants
Comparative Political and Legal Systems (3+0) s
Political systems and the law. Case studies from non-industrial societies, developing nations, and parapolitical systems or encapsulated societies, such as native peoples in the U.S. Political structures and institutions; social conflict, dispute settlement, social control and the law, political competition over critical resources; and ethnicity. (Prerequisite: ANTH 104 or permission of instructor.)

ANTH 306 3 Credits As Demand Warrants
Economic Anthropology (3+0) s
Relationships between economic and other social relations. Preindustrial societies. Relevance of formal economics to small-scale societies and developing nations. Exchange, formal and substantive economics, market economics, rationality, political economy, and the economics of development. (Prerequisite: ANTH 104 or permission of instructor.)

ANTH 307 3 Credits Alternate Spring
Kinship and the Family (3+0) s
Forms and function of family and household organization, kinship and marriage in diverse human socio-cultural systems. Case studies from tribal and complex societies including contemporary United States. (Prerequisite: ANTH 104 or permission of instructor. Next offered: 1991-92.)

ANTH 309 3 Credits Alternate Springs
Arctic Prehistory (3+0) s
Archaeological cultures of the northern regions from the first occupation to the present. 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. (Prerequisite: ANTH 103 or permission of instructor. Next offered: 1991-92.)

ANTH 315 3 Credits Alternate Fall
Human Biology (2+3) n
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. Human skeletal biology, including metrical and nonmetrical variation, aging and sexing skeletal remains, and paleopathology. Materials fee: $10.00. (Prerequisite: ANTH 103 or BIOL 103X. Next offered: 1991-92.)

ANTH 320 3 Credits Spring
Language and Culture: Applications to Alaska (3+0) s
(Same as ANS 320)
Language, ethnicity, and their interrelationships. Communicating ethnic identity. Patterns of language use which affect communication between ethnic groups. 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
Anthropology of the peoples of North and South America, including Eskimo, Aleut and Indian populations. Analysis of patterns of biological variation within and between prehistoric and modern human populations. 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
Early human developments, rise of agricultural communities, and Golden Age states (Xia, Shang, Zhou). (Prerequisite: Any archaeology course or Asian history course or permission of instructor. Next offered: 1991-92.)

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 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. (Prerequisite: ANTH 242 or permission of instructor. Next offered: 1991-92.)

ANTH 381 3 Credits Alternate Spring
The Inupiaq and Yup'ik Peoples (3+0) s
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. (Prerequisite: ANTH 242 or permission of instructor. Next offered: 1991-92.)

ANTH 382 3 Credits Alternate Spring
The People of Alaskan Southeast (3+0) s
Tlingit, Haida and Tsimshian societies in the framework of Northwest Coast culture-area. Impact of Russian penetration and of the historical factors. Materials fee: $15.00. (Prerequisite: ANTH 242 or permission of instructor. Next offered: 1991-92.)

ANTH 383 3 Credits Alternate Fall
Athabaskan Peoples of Alaska and Adjacent Canada (3+0) s
Contemporary conditions and traditional heritage of the Athabaskan populations of Alaska and Canada. Impact of Euroamericans on these populations and cultures. Materials fee: $20.00. (Prerequisite: ANTH 242 or permission of instructor. Next offered: 1992-93.)

ANTH 410 3 Credits Alternate Fall
History of Social/Cultural Anthropology (3+0) s
Major theoretical approaches in cultural/social anthropology chronologically from formulation of the discipline of anthropology to current theory. 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: 1992-93.)

ANTH 412 3 Credits As Demand Warrants
Anthropology of Art (3+0) s
Anthropological study of art in cross-cultural perspective. Social context of art production and use, 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 and Theory (2+3) s
Archaeological methods and analysis as the framework for different perspectives in archaeology. Application to specific research problems. Materials fee: $10.00. (Prerequisite: A course in archaeology or permission of the instructor. Next offered: 1992-93.)

ANTH 414 3 Credits Alternate Spring
Environmental Archaeology (3+0) n
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 analysis. (Prerequisite: Any 200 level Anthropology course. Next offered: 1991-92.)

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 423 3 Credits Alternate Spring
Paleoanthropology (2+3)
Analysis of the Plio-Pleistocene hominid fossil record, including comparative primate and hominid skeletal and dental anatomy, systematics, taphonomy and long-term biobehavioral adaptations. (Prerequisites: ANTH 103 and 212 or permission of instructor. Next offered: 1992-93.)

ANTH 428 3 Credits Every Third Fall
Ecological Anthropology (3+0) n
Biological, environmental and cultural factors and their interplay in defining the human condition, with examples from Arctic and other populations. (Prerequisite: Junior standing or permission of instructor. Next offered: 1991-92.)

ANTH 465 3 Credits Alternate Spring
Geoarcheology (3+0)
(Same as GEOS 465)
Geological context of archaeological sites and the geologic factors that affect their preservation, with emphasis on Alaska. Includes a one or two-day weekend field trip in late April or early May. (Prerequisite: GEOS 101, an introductory course in archaeology, or permission of instructor. Next offered: 1991-92.)

ANTH 600 0-1 Credits Fall, 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 610 3 Credits Alternate Fall
Northern Indigenous Peoples and Contemporary Issues (3+0)
(Same as NORS 610)

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)
Basic video equipment operation and elementary equipment maintenance. Camera techniques, portable video recorders, lighting, audio, and simple video production.

APAR 103 1 Credit **As Demand Warrants**
Editing Videotape (1+1)
Principles and operations in electronic editing of videotape. Persons completing this course may use Media Center videotape editing facilities.

APAR 105 1 Credit **As Demand Warrants**
Community TV Production (1+1)
Video production for the Nome Public Access Cable Television (NPACT) channel in a ten-week "hands-on" training lab using a variety of video equipment. Each student will produce at least one 30-minute production. Offered at Northwest Campus.

APAR 107 1 Credit **As Demand Warrants**
Beading (1+1)
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)
Fundamentals of skin sewing. Projects (e.g. slippers, mukluks, mittens, fur hats, vests and ruffs) dependent upon student ability and experience. 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. 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**
Bookkeeping for Business II (3+0)
Accounting for business partnerships of corporations. Covers other materials selected by teacher, based on student interest. Continuation of ACCT 051.

ABUS 056 1 Credit **As Demand Warrants**
Mathematics for the Office (1+0)
Review of basic math processes with application to banking, payroll, business expense reports, commissions, and discounts.

ABUS 070 1 Credit **Fall, Spring**
Job Readiness Skills (1+0)
Pre-employment and human relation skills necessary for job success, including how to identify career choices and employment opportunities; how to prepare a resume, job applications, cover and follow-up letters; and how to develop human relation skills. The student will select, prepare and be interviewed for jobs which match his/her skills identified through a self-assessment inventory. Offered at Northwest Campus.

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)
Fundamental accounting procedures for a one-owner service and merchandising business for the student who has not had high school bookkeeping.

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 (1-3+0)
Personal financial planning, goal setting, and investing. Stocks, bonds, trusts, securities, options, real estate and other investment vehicles. Inflation, taxes, interest rates, retirement, and selecting financial planners. Also available via Independent Learning.

ABUS 130 3 Credits **As Demand Warrants**
Real Estate (3+0)
Broad social and economic impact of real estate. Buying, selling, leasing, and investing in residential and investment real estate. Contracts, deeds, mortgages, leases, title insurance, sales, brokerage and other related subjects. Fundamental preparation for the Real Estate licensing examination.

ABUS 135 3 Credits **As Demand Warrants**
Recordkeeping for Business (3+0)
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)
Payroll records and laws. Methods to compile and calculate payroll information, earnings, deductions, net wages. City, state and federal tax report forms. For payroll personnel.

ABUS 142 2 Credits **As Demand Warrants**
Office Accounting I (2+0)
Basic accounting procedures in retail, service, and trade businesses. The complete accounting cycle including recordkeeping, posting and preparation of financial statements, bank reconciliation, payroll computations and closing books. Accounts receivable, accounts payable, purchasing, credit and other accounting requirements.

ABUS 143 2 Credits **As Demand Warrants**
Office Accounting II (2+0)
Financial activities of partnerships and corporations with emphasis on accrual basis of accounting. Notes payable, notes receivable, interest transactions, bad debts, partnership equity accounting, corporate stock transactions, corporate earnings, capital transactions, bonds, long term liabilities and investments.

ABUS 145 3 Credits **As Demand Warrants**
Applied Accounting Issues for Small Businesses (3+0)
Small business accounting issues and situations including budgeting, cash management, accounting considerations when doing business with the government or non-profits, and evaluation of the financial condition of the firm. (Prerequisite: ACCT 101. Next offered: 1991-92.)

ABUS 151 3 Credits **Fall**
Village Based Entrepreneurship (3+0)
Technical and personal requirements for establishing and maintaining a small business in a rural village; advantages and disadvantages of operating a small business in a rural village.

ABUS 154 3 Credit **As Demand Warrants**
Human Relations (3+0)
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)
Review of basic math computation skills applied to various business areas. Emphasis on applications.

ABUS 156 2 Credits **As Demand Warrants**
Writing for the Office (2+0)
(Same as OP 156)
Writing tasks encountered in typical office situations. Successful letters, minutes, and reports which convey their intent and get desired responses. The course is offered in two modules, each for one credit.

ABUS 160 3 Credits **As Demand Warrants**
Principles of Banking (3+0)
Banking in today's economy. 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
Foundation and Structures of Credit Unions (3+0)
Organization and function of credit unions. 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)
Real estate mortgage credit operations of commercial banks; mortgage markets, financing residential and income producing property, and administrative tasks of mortgage departments.

ABUS 167 3 Credits As Demand Warrants
Branch Management (3+0)
Branch functions and the manager's role in their operations. Functional aspects of the branch management position.

ABUS 179 3 Credits As Demand Warrants
Fundamentals of Supervision (3+0)
Effective supervisory concepts including planning, organizing, and staffing functions. Communicating and delegating effectively, morale, productivity, decision making, position discipline and performance goals development.

ABUS 180 3 Credits As Demand Warrants
Commercial Lending (3+0)
Overview of the commercial lending function divided into four sections: commercial lending, lending process, portfolio management, and regulation and business development.

ABUS 181 3 Credits As Demand Warrants
Law and Banking Applications (3+0)
Legal structure implicit in bank operations. Legal situations that occur in deposit, collection, dishonor and return, and payment of checks. Legal relationships of parties in bank collection channels and between a bank and its depositors. (Prerequisite: ABUS 160 or 161.)

ABUS 185 3 Credits As Demand Warrants
Teller Operations Training (3+0)
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. Entry level job skills for work as a teller in a bank, savings loan, or credit union. (Prerequisite: ABUS 070.)

ABUS 188 2 Credits As Demand Warrants
Personal Income Tax (2+0)
Taxable income, deductions, credit, exemptions, and computation. Computer use, recordkeeping methods, tax forms and new tax laws.

ABUS 211 2 Credits As Demand Warrants
Tax for Business Entities (2+0)
Business tax reports. Tax planning 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. New tax laws.

ABUS 221 1-3 Credits As Demand Warrants
Microcomputer Accounting (1-3+0)
(Same as CAPS 221)
Computer processing of accounting transactions. Software packages, microcomputer systems and hardware. Computer terminology, system analysis, and actual computer operations in accounting.

ABUS 222 3 Credits As Demand Warrants
Computer Applications in Business (3+0)
Using a microcomputer to solve business problems. Problem solution using the LOTUS 1-2-3 spreadsheet program and a general ledger accounting program (both supplied). (Prerequisite: One accounting course or instructor's approval.)

ABUS 223 3 Credits As Demand Warrants
Real Estate Law (3+0)
Deeds and conveyances, mortgages, liens, rentals, appraisals, and other transactions in real estate and law. Also available via Independent Learning.

ABUS 224 3 Credits As Demand Warrants
Money and Banking (3+0)
Basic economic principles. 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 161.)

ABUS 229 3 Credits As Demand Warrants
Principles of Success (3+0)
Goal setting, time management, attitude control, financial gain, failure principles, and success development.

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. Current accounting pronouncements.

ABUS 231 3 Credits As Demand Warrants
Introduction to Personnel (3+0)
Company organizational structure, 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)
Management functions including planning, organizing, staffing, directing and controlling, human aspects of management, and decision making. (Prerequisite: BA 151 or instructor permission.)

ABUS 233 3 Credits As Demand Warrants
Financial Management (3+0)
Corporate financial planning and control, asset management, capital budgeting, financial markets and instruments. (Prerequisite: BA 151, ACCT 101.)

ABUS 234 3 Credits As Demand Warrants
Financial Counseling (3+0)
Counseling processes, choosing and implementing action plans, evaluating client 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)
Legal aspects of business problems. Principles, institutions and administration of law in contracts, agency, employment, personal sales and property ownership. Also available via Independent Learning. (Prerequisite: BA 151.)

ABUS 243 3 Credits As Demand Warrants
Applied Cost Accounting (3+0)
Principles and applications for manufacturing and non- manufacturing firms. 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 using cost accounting methods. (Prerequisite: ACCT 101 and ACCT 102 or ABUS 142 and ABUS 143.)

ABUS 244 3 Credits As Demand Warrants
Loan Officer Development (3+0)
Interpersonal skills for dealing with customers and bank personnel. 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)
Use of accounting information for managerial decisions, planning and control. Accounting process, responsibility in accounting, performance measurement, capital budgeting and analysis of financial reports. (Prerequisites: ACCT 101, 102.)

ABUS 253 3 Credits As Demand Warrants
Principles of Retailing (3+0)
Current retail practices and technologies. Merchandising, store operation, computerized inventory control and electronic cash registers, finance and credit, personnel, sales promotions and selling. Preparation for a career in a retailing or service business.

ABUS 254 3 Credits As Demand Warrants
Salemanship (3+0)
Explores salesmanship as a skill individuals use in selling themselves and their ideas as well as products and services. Personal selling, buyer behavior and communication, creative selling process, sales management, and time-use management. For persons with and without sales experience.

ABUS 255 3 Credits As Demand Warrants
Marketing in Tourism (3+0)
Basic principles of marketing for the tourism industry. Emphasis on Alaska as the tourist destination. (Prerequisite: BA 160.)

ABUS 256 3 Credits As Demand Warrants
Small Hotel, Bed and Breakfast, and Lodge Operations (3+0)
Introduction to hospitality industry focusing on the development and operation of small hotels, bed and breakfast accommodations, and lodge operations.

ABUS 261 3 Credits As Demand Warrants
Analyzing Financial Statements (3+0)
Statement analysis, accounting data, cash flow management ratios, comparative statements, forecasting, liquidity, solvency and capital structure related to financial conditions and performance of modern business enterprise.

ABUS 272 3 Credits Spring
Small Business Planning (3+0)
Small business planning process elements including the components of a written business plan.

ABUS 273 3 Credits As Demand Warrants
Managing A Small Business (3+0)
Entrepreneurship and management, starting a new business, buying an existing business or franchise. Managing, marketing, staffing, financing, budgeting, pricing, operational analysis and controls.

ABUS 099, 199, 299 1-3 Credits As Demand Warrants
Practicum in Applied Business
Supervised training and work experience. Analysis of work experience and relationship of the job to career and academic goals. 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)
Fundamentals of surface and underground mining, economic planning, proper exploration designs, environmental concerns, safety factors.

AMIT 109 1 Credits As Demand Warrants
Underground Mine Safety (1+0)
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, electrical hazards. Course fulfills the Mine Safety Health Administration requirements for new underground miner training. Students are awarded MSHA certificate upon course completion. Materials fee: $5.00.

AMIT 110 3 Credits As Demand Warrants
New Underground Miner Training (3+0)
Orientation to the mine environment, general mine inspection, scaling, staging, drilling, rock bolting, blasting, mucking, and mine rescue. Provides the inexperienced underground miner with the mandatory MSHA federal training to become employable. Materials fee: $50.00.

AMIT 120 2 Credits As Demand Warrants
Explosives I (2+0)
Theory and safe use of explosives with a focus on blasting agents used for rock excavation.

AMIT 125 3 Credits As Demand Warrants
Mineral Exploration Techniques (3+0)
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. Also available via Independent Learning.

AMIT 129 1 Credit As Demand Warrants
Surface Mine Safety (1+0)
Rights of miners, introduction to the work environment, ground control, hazard recognition, first aid, and explosive safety. Course fulfills the Mine Safety Health Administration requirements for surface miner training. Students are awarded MSHA certificate upon completion of the class. Materials fee: $3.00.

AMIT 130 3 Credits As Demand Warrants
Surface Mining Operations (3+0)
Safe operations of a surface mine. Placer gold, sand and gravel, coal, and open pit metal mines.

AMIT 140 3 Credits As Demand Warrants
Envionmental Permitting (3+0)
Mineral development permits required in Alaska. Students are encouraged to provide their own case histories.

AMIT 151 1 Credit As Demand Warrants
Settling Pond and Recycle Techniques (1+0)
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)
Sampling, theory and practice of fire assaying. 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)
Production laboratory procedures for sample analysis, heap leaching and titrations. Individual projects required.

AMIT 154 1 Credit As Demand Warrants
Water Quality and Flocculents (1+0)
Water quality processes using flocculents; removal of total suspended solids from placer mining waste water.

AMIT 155 1 Credit As Demand Warrants
Drilling Technology (1+0)
Terminology and techniques used in exploration and production drilling.

AMIT 156 1 Credit As Demand Warrants
Applied Cartography (1+0)
Map and chart preparation. Drafting skills for prospecting maps, mine maps, permits and data presentation.

AMIT 161 1 Credit As Demand Warrants
Alaska Ore Deposits (1+0)
Geology, ore reserves and preliminary mining plans of significant Alaskan mineral deposits.

AMIT 162 1 Credit As Demand Warrants
Geochemical Sampling (1+0)
Hands-on 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)
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. Job requirements, safety, and environmental consideration. Optional field trip to an active coal mine. Materials fee: $5.00.

AMIT 180 3 Credits As Demand Warrants
Colored Stone Grading and Evaluation (3+0)
Grading, appraisals, and identification of colored stones. Formation and structure, properties, deposits and production, and descriptions of major gemstones.

AMIT 185 1 Credit As Demand Warrants
Diamond Evaluation and Grading (1+0)
Colors and clarity grading of diamonds, mining of raw material, and detection of stimulants.

AMIT 205 1 Credit As Demand Warrants
Geomagnetic Surveying (1+0)
Placer gold deposit prospecting using magnetic surveying. Student survey work and data interpretation.

AMIT 206 1 Credit As Demand Warrants
Electromagnetic Surveying (1+0)
Electromagnetic geophysical exploration methods and operations using the VLF-EM-16, an exploration tool for gold and/or massive sulfide deposits.

AMIT 210 3 Credits As Demand Warrants
Advanced Underground Mining (3+0)
Skill training conducted in safety, drilling, blasting, ground support, mucking, maintenance and utilities at the Silver Fox Mine.

AMIT 220 1 Credit As Demand Warrants
Explosives II (1+0)
Advanced techniques in safe use of explosives. Students get 'hands-on' experience in blasting. Materials fee: $20.00.

AMIT 230 1 Credit As Demand Warrants
Field Methods (1+0)
Topographic map reading using a compass and basic field procedures.

AMIT 231 1 Credit As Demand Warrants
Heap Leaching (1+0)
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)
Gemstones covered are garnet, pyroxene, organic, inorganic, and specialty stones. A continuation of Colored Stone Evaluation I. (Prerequisite: AMIT 180.)

AMIT 282 1-2 Credits As Demand Warrants
Mining Coop Work Experience
Practical work experience in a professional mining environment. For the student who has mastered basic mining techniques and terminology. Placement and work assignments depend upon student experience.

Applied Photography

APHO 072 1 Credit As Demand Warrants
Photography Fundamentals (1+0)
Use of modern cameras to make colorful, well- exposed photographs. 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)
Development of color film, preparation of projection slides, color prints and enlargements, mixing color filters for special effects; and setting 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)
Developing print film using the Kodak Flexicolor C-41 and Hobby-pac processes. Making proof sheets and enlargements 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)
Exposure to design, printmaking, weaving, and sculpture. Individual studio projects, lectures, and field trips introduce areas for further study.

ART 101 3 Credits As Demand Warrants
Introduction to Ceramics (3+0)
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
Still life, portrait, interior and landscape compositions using basic drawing materials. Emphasizes self-expression by developing spontaneous artistic ideas into a more focused style. For the student with little or no training in drawing to explore his or her drawing abilities.

ART 105 3 Credits Fall, Spring
Beginning Drawing (1+4) h
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)
Investigation of basic materials, various media and techniques available for painting.

ART 122 1-3 Credits As Demand Warrants
Introduction to Stained Glass (2+4) h
Fundamental skills to construct stained glass pieces. Basics of glass cutting, leading and soldering. Each student completes 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 200X 3 Credits Fall, Spring
Aesthetic Appreciation: Interrelation of Art, Drama, and Music (3+0) h
(Same as MUS 200X and THR 200X)
Understanding and appreciation of art, drama, and music through an exploration of their relationship. Topics include the creative process, structure, cultural application and diversity, the role of the artist in society, and popular movements and trends.

ART 201 3 Credits Fall, Spring
Beginning Ceramics (1+4) h
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
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)
(Same as ED 208)
Concepts in art education for persons with limited art background working with young children. Combines a philosophy of art education, art history, and 'hands-on' experiences to enable the teacher to effectively integrate visual arts into the curriculum as enjoyment and enrichment.

ART 209 3 Credits Fall, Spring
Beginning Metalsmithing (1+4) h
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
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. 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. (Prerequisites: ART 105 and ART 161 or 162 or 163, or permission of the instructor. Next offered: 1993-94.)

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. (Prerequisite: Sophomore standing.)

ART 268 3 Credits Fall, Spring
Beginning Native Art Studio (1+4) h
(Same as ANS 268)
Understanding and applying the traditional designs and technologies of Native art. (Prerequisite: ART 105 or permission of instructor.)

ART 301 3 Credits Fall, Spring
Intermediate Ceramics (1+4) h
Continuation of beginning ceramics. Emphasis on glaze calculations and advanced plaster techniques. Materials fee: $35.00. (Prerequisite: 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. (Prerequisite: ART 205 or permission of instructor.)

ART 307 3 Credits Fall, Spring
Intermediate Printmaking (1+4) h
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; some emphasis on design. Materials fee: $35.00. (Prerequisite: 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. (Prerequisite: 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 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 credit with permission of the instructor. (Prerequisite: ART 223.)

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 to the present. Concentration on the artistic pluralism of 20th century art forms: Cubism, Futurism, Surrealism, Expressionism, Constructivism, Non-objective Art, Abstract Expressionism, Pop Art, Realism and many other "isms." (Prerequisite: ART 262 or permission of instructor. Next offered: 1991-92.)

ART 364 3 Credits Alternate Spring
Italian Renaissance Art (3+0) h
Development of the Renaissance from early Florentine to the High Renaissance of Venice. Study of art by Massacio, Michelangelo, DaVinci, Titian, etc. (Prerequisite: ART 261 or permission of instructor. Next offered: 1992-93.)

ART 365 3 Credits Fall
Native Art of Alaska (3+0) h
(Same as ANS 365)
Art forms of the Eskimo, Indian and Aleut from prehistory to the present. Changes in forms through the centuries.

ART 366 3 Credits Alternate Spring
Northwest Coast Indian Art (3+0) h
(Same as ANS 366)
Arts of the Northwest Coast Indians and the place of art in their culture. (Next offered: 1991-92.)

ART 367 3 Credits Alternate Spring
Eskimo Art (3+0) h
(Same as ANS 367)
Eskimo art from Alaska, Canada and Siberia beginning with the earliest known pieces to the beginning of the 20th century. (Next offered: 1992-93.)

ART 368 3 Credits Fall, Spring
Intermediate Native Art Studio (1+4) h
(Same as ANS 368)
Understanding and applying advanced traditional designs and technologies of Native art. (Prerequisite: ART 268 or permission of instructor.)

ART 371 3 Credits Fall
Introduction to Computer Art (1+4)
Digital editing with an overview of the field of computer art. (Prerequisites: Introductory computer course and ART 105, 161, 162, or 163.)

ART 401 3 Credits Fall, Spring
Advanced Ceramics (1+4) h
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. (Prerequisite: ART 301 or permission of instructor.)

ART 407 3 Credits Fall, Spring
Advanced Printmaking (1+4) h
Individual development of technical and creative processes. May be repeated for credit with permission of instructor. Materials fee: $25.00. (Prerequisite: ART 307 or permission of instructor.)

ART 409 3 Credits Fall, Spring
Advanced Metalsmithing and Jewelry (1+4) h
Materials and processes; introduction to holloware skills and forging. May be repeated for credit with permission of instructor. Materials fee: $35.00. (Prerequisite: ART 309 or permission of instructor.)

ART 411 3 Credits Fall, Spring
Advanced Sculpture (1+4) h
Principles, practices and concepts of sculpture. May be repeated for credit with permission of instructor. Materials fee: $35.00. (Prerequisite: 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 credit 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: 1992-93.)

ART 419 3 Credits Fall, Spring
Life Drawing (1+4) h
Drawing from life; 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: 1991-92.)

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: 1993-94.)

ART 441 3 Credits Every Third Spring
Lost Wax Casting (1+4) h
Design and execution of jewelry and other small metal objects by lost wax casting. Materials fee: $35.00. (Prerequisite: ART 409 or permission of instructor. Next offered: 1993-94.)

ART 442 3 Credits Every Third Spring
Nonferrous Forging (1+4) h
Design and execution of hammer forged nonferrous metal objects. Materials fee: $35.00. (Prerequisite: ART 409 or permission of instructor. Next offered: 1991-92.)

ART 443 3 Credits Every Third Spring
Holloware (1+4) h
Design and construction of holloware by raising, sinking, and fabrication. Materials fee: $35.00. (Prerequisite: ART 409 or permission of instructor. Next offered: 1991-92.)

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: 1991-92.)

ART 450 3 Credits Every Third Fall
Raku Pottery (1+4) h
Raku bodies, glazes and decorations. Kiln building. Materials fee: $35.00. (Prerequisite: ART 201 or permission of instructor. Next offered: 1993-94.)

ART 451 3 Credits Every Third Spring
Earthenware (1+4) h
Earthenware pottery bodies, glazes, decorations and firing techniques. Materials fee: $35.00. (Prerequisite: ART 201 or permission of instructor. Next offered: 1992-93.)

ART 452 3 Credits Every Third Fall
Porcelain (1+4) h
Porcelain bodies, glazes, decorations and firing techniques. Materials fee: $35.00. (Prerequisite: ART 201 or permission of instructor. Next offered: 1991-92.)

ART 453 3 Credits Every Third Spring
Kiln Design and Construction (1+4) h
Kiln design and construction including building a full- sized kiln. Materials fee: $35.00. (Prerequisite: ART 201 or permission of instructor. Next offered: 1991-92.)

ART 454 3 Credits Every Third Fall
Vapor Glazing (1+4) h
Clays, glazes, decorative techniques and kilns used in "salt glazing" (i.e. vapor glazing). Materials fee: $35.00. (Prerequisite: ART 201 and permission of instructor. Next offered: 1991-92.)

ART 455 3 Credits Spring
Studio Glass (1+4) h
Studio participation in cold glass and limited hot glass techniques. Materials fee: $35.00. (Prerequisite: Advanced standing or permission of instructor.)

ART 468 3 Credits Fall, Spring
Advanced Native Art Studio (1+4) h
(Same as ANS 468)
Advanced traditional designs and technologies of Native art. Use of contemporary materials to interpret traditional forms. (Prerequisite: ART 368 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 105 and ART 161, 162 or 163; ART 371 or CS 201 or equivalent.)

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. Alaska Driver's Manual, material necessary to gain an Alaska Driver's Permit. Defensive driving methods for accident-free driving and basic mechanical information.

AUTO 081 1 Credit As Demand Warrants
Behind-the-Wheel Training (0+3)
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)
Parts and functions of a small engine and its electrical system. Dismantling procedures, cleaning and reassembly techniques, gasket-making, lubrication, troubleshooting, and minor repairs.

AUTO 103 1 Credit As Demand Warrants
Auto Tune-Up (1+0)
A dual purpose course serving as an introduction to an advanced course and as a consumer interest course. Uses a 'hands-on' approach to basic troubleshooting and maintenance, with tools commonly available.

AUTO 170 1 Credit As Demand Warrants
Snowmachine Maintenance and Repair (1+0)
Fundamental skills for operation and repair. 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 navigation. Preparation for FAA private pilot-airplane written exam. Also available via Independent Learning.

AVTY 101 2 Credits As Demand Warrants
Private Pilot Flight Training (2+0)
Flight instruction is arranged by student through approved pilot school or independent flight instructor. Training will meet federal aviation regulations. Course completion requires awarding of private pilot certificate. (Prerequistie: Department approval required.)

AVTY 102 3 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. Employment considerations for commercial pilots surveyed. Preparation for the FAA commercial pilot-airplane written exam.

AVTY 103 2 Credits As Demand Warrants
Commercial Flight Training (2+0)
Flight instruction is arranged by student through approved pilot school or independent flight instructor. Training will meet federal aviation regulations. 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 is arranged by student through approved pilot school or independent flight instructor. Training will meet federal aviation regulations. Course completion requires awarding of single- engine sea rating. (Prerequisites: Private pilot certificate or higher, department approval required.)

AVTY 107 1 Credit As Demand Warrants
Multi-Engine Flight Training (1+0)
Flight instruction is arranged by student through approved pilot school or independent flight instructor. Training will meet federal aviation regulations. Course completion requires awarding of multi- engine rating. (Prerequisites: 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 in techniques of ski-plane 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 is arranged by student through approved pilot school or independent flight instructor. Training will meet 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)
Review of federal aviation regulations, air traffic control procedures, communications, normal and emergency aircraft procedures, and aircraft performance. (Prerequisite: Student must have private pilot certificate.)

AVTY 111 3 Credits Fall
Fundamentals of Aviation (3+0)
Basic concepts associated with the aircraft and its environment. Aircraft and its components, including basic systems. Federal Aviation Administration regulations, airports and airspace utilization, aeronautical charts, navigation, weather theory, medical and emergency factors.

AVTY 116 3 Credits As Demand Warrants
Aviation History (3+0)
Aviation from its early days to the present. People, places, and machines contributing to the development of Alaskan aviation.

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)
Individualized operation and use of the LINK GAT-I flight simulator and selected practice in basic flight maneuvers, procedures and techniques. A supplement to both private pilot ground school and actual flight training. (Prerequisite: AVTY 100 or concurrent enrollment in AVTY 100, 111 or 112.)

AVTY 155 1-3 Credits As Demand Warrants
Preventive Maintenance (1-3+0)
Mechanics of the airplane, its power plant and systems to enable the student to evaluate malfunctions and make maintenance decisions. Designed for the pilot-owner. (Prerequisite: AVTY 100 or permission of instructor.)

AVTY 200 4 Credits As Demand Warrants
Instrument Ground School (3+3)
Instrument flight operations in detail, altitude instrument flying, air traffic control and navigation facilities, pilot responsibilities. IFR enroute charts, instrument approach procedures, airspace and airway route system, ATC operations and procedures. Federal Aviation Regulations, flight planning, human factors, meteorology. Includes visits to FAA RAPCO and ARTCC facilities. Laboratory consists of at least 10 hours of instrument instruction by an authorized instructor in an FAA-approved instrument ground trainer. The student is responsible for making arrangements for an appropriate instrument ground trainer, instrument instructor, and financing. (Prerequisites: AVTY 102 or permission of the instructor.)

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 exam. (Prerequisite: Commercial pilot certificate or permission of instructor.)

AVTY 203 2 Credits As Demand Warrants
Flight Instructor Flight Training (2+0)
Flight instruction is arranged by student through approved pilot school or independent flight instructor. Training meets federal aviation regulations. Course completion requires awarding of certified flight instructor certificate. (Prerequisites: 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. (Prerequisites: 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 exam. (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. (Prerequisites: Commercial pilot certificate, 1500 hours of flight time as pilot or 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. (Prerequisites: 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)
Training utilizing the GAT-I Flight Simulator (individually scheduled through the aviation department). A UAF approved instructor must direct and accompany the student while the simulator is in operation. Time accumulated may be applied to requirements of advance ratings or flight 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 meets federal aviation flight training directives. Approximately 40 hours flying. Course completion requires the awarding of FAA instrument rating. (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). Preparation for the FAA flight engineer written exam. (Prerequisites: FAA commercial pilot license and instrument rating, or equivalent, and department approval.)

AVTY 231 3 Credits As Demand Warrants
Arctic Survival (3+Arr.)
(Same as NRM 231)
Use of principles, procedures, techniques and equipment to survive extreme arctic conditions and to assist in safe recovery. Lab required. Materials fee: $35.00.

AVTY 232 3 Credits As Demand Warrants
Aviation Astronomy and Navigation (3+0)
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 theory of Loran 'C' and positive and adverse conditions regarding its use. Use of points programmed into the computer, effective navigation, and preprogramming the computer.

AVTY 235 3 Credits As Demand Warrants
Elements of Weather (3+0)
(Same as NRM 235)
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 involving the aircraft and other departments of an airline business. Those wanting to be eligible for aircraft dispatcher certificate must be 23 years of age.

AVTY 301OW 3 Credits Fall
(Same as NRM 301)
Air Worker Strategies (3+0)
Knowledge and skills to use general aviation aircraft as a tool for field transportation, field logistics or as a platform for instrumentation and data collection. For pilots or air workers who use aviation in natural resources managment. (Prerequisite: AVTY 101 or 111.)

AVTY 302 2 Credits Spring
Aerial Data Collection (2+0)
(Same as NRM 302)
Uses of aircraft to collect resource data ocular observations through operation of remote sensing data equipment. Mission design and sampling strategies. (Prerequisite: AVTY 301.)

AVTY 302L 1 Credit Spring
Aerial Data Collection Laboratory (0+2)
(Same as NRM 302L)
Optional Lab portion of AVTY 302. (Prerequisites: AVTY 301, 302.)

AVTY 305 3 Credits Spring
Aviation Law (3+0)
Impact of law and insurance on the aviation industry for pilots, air workers, and other aviation professionals; emphasis on commercial operations and the air transport service; history of the FAA; aircraft ownership; aviation insurance; FAA enforcement procedures; negligence; product liability. (Prerequisites: AVTY 102 and 200 or permission of instructor.)

AVTY 402 3 Credits Spring
Aircraft Management (3+0)
(Same as NRM 402)
Securing, dispatching, and monitoring aircraft operations. Safety, security, community relations, cost-effective scheduling and personnel management for mission scheduling. (Prerequisite: AVTY 301.)

AVTY 405 3 Credits Fall
Advanced Aircraft Operations (3+0)
Techniques and requirements associated with the operation of turbine powered aircraft, remotely piloted aircraft, helicopters, and STOL aircraft for pilots and air workers; safety; systems; aerodynamics; operating characteristics. (Prerequisites: AVTY 100, 111, 301, or 302 or permission of instructor.)

AVTY 410 2 Credits Summer
Techniques of Bush Flying (1+2)
Flight training emphasizing emergency procedures in remote locations, off-airport operations, critical flight attitudes, low level flight, terrain flying, special manuevers and unique soft and short field takeoffs and landings. (Prerequisites: AVTY 231, 235, 301, commercial rating and 20 hours taildragger time.)

Biology

BIOL 102 3 Credits Summer, As Demand Warrants
High Latitutde Biology (3+0) n
Major themes in modern biological sciences, using experiences and examples in Alaska and circumpolar regions. Exploration of one of six themes in sufficient detail to become aware of the knowledge frontier dividing the known from the undiscovered. Research term paper required.

BIOL 103X 4 Credits Fall, Spring
Biology and Society (3+3) n
Fundamental principles of biology; emphasis on their application to humans in the modern world. Lectures, laboratory demonstrations, experiments, and discussions of contemporary biological topics. For non-science majors; cannot be used as a biology elective by biological science majors. Laboratory fee: $20.00. (Offered every Fall at the Northwest Campus.)

BIOL 104X 3 Credits Fall, Spring
Natural History of Alaska (3+0) n
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. May not be used as biology elective credit for a major in biological science. Also available via Independent Learning.

BIOL 105X 4 Credits Fall
BIOL 106X 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. Laboratory fee: $20.00. (Prerequisite: High school chemistry recommended. BIOL 105X for BIOL 106X.)

BIOL 111X 4 Credits Fall
BIOL 112X 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. These courses may not be used as biology elective credit for majors in biological sciences. Laboratory fee: $20.00. (Prerequisite: BIOL 111 for BIOL 112.)

BIOL 150 3 Credits Independent Learning Only
Introduction to Marine Biology
Survey of marine organisms, evolution of marine life, habitats and communities of ocean zones, productivity, and marine resources. For non-science majors; may not be used as biology elective credit for a major in biological science.

BIOL 205 4 Credits Alternate Fall
Vertebrate Anatomy (2+6) n
Anatomy of bony fishes, birds, and mammals. Laboratory dissections emphasized. Laboratory fee: $20.00. (Prerequisites: BIOL 105X, 106X. Next offered: 1991-92.)

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: $20.00. (Prerequisites: BIOL 105X, 106X; CHEM 103X and 104X or 105X may be taken concurrently.)

BIOL 222 4 Credits Spring
Biology of the Vertebrates (3+3) n
Fishes, amphibians, reptiles, birds, and mammals emphasizing systematics, evolution, structure, and function. Laboratory fee: $20.00. (Prerequisites: BIOL 105X, 106X.)

BIOL 239 4 Credits Fall
Introduction to Plant Biology (3+3) n
Structure, function, ecology, and evolutionary patterns of the major groups of plants. Laboratory fee: $20.00. (Prerequisites: BIOL 105X, 106X.)

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
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. Mechanisms of evolutionary change in populations. Organization of biotic communities. Structure and function of ecosystems. (Prerequisites: BIOL 105X, 106X.)

BIOL 277 3 Credits Alternate Spring
(Same as NRM 277)
Introduction to Conservation Biology (3+0)
Introduction to the basic ecological, genetic, management, legal, and historical developments in conservation biology and focused efforts to manage biological diversity resources, with a status review of important habitats and endangered species. (Prerequisites: BIOL 105X, 106X. Next offered: 1991-92.)

BIOL 305 4 Credits Fall
Invertebrate Zoology (3+3) n
Classification, structure, function, evolution, and life histories of invertebrate animals. Laboratory fee: $20.00. (Prerequisites: BIOL 105X, 106X, 210, and 271.)

BIOL 307 3 Credits Alternate Spring
Parasitology (2+3) n
Structure, function, life history, and ecology of animal parasites. Laboratory fee: $20.00. (Prerequisites: BIOL 105X, 106X and BIOL 222 or permission of instructor. Next offered: 1992-93.)

BIOL 308 3 Credits Spring
Principles of Evolution (3+0) n
Mechanisms of, and evidence for, the evolution of living systems. Coding and transmission of genetic information in populations, population variability, change, and stabilization. (Prerequisites: BIOL 105X, 106X, 362, 271, or permission of the instructor.)

BIOL 317 4 Credits Alternate Spring
Comparative Anatomy of Vertebrates (2+6) n
Anatomy, phylogeny and evolution of the vertebrates. Laboratory fee: $20.00. (Prerequisites: BIOL 105X, 106X. Next offered: 1992-93.)

BIOL 328 3 Credits Spring
Biology of Marine Organisms (3+0) n
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 331 4 Credits Spring
Systematic Botany (2+6) n
Classification of flowering plants with emphasis on Alaskan flora; taxonomic principles, classical and experimental methods of research. Preregistration is required to insure that each student will prepare a plant collection. Laboratory fee: $20.00. (Prerequisite: BIOL 239 or permission of the instructor. BIOL 362 recommended.)

BIOL 333 3 Credits Alternate Fall
Biology of the Non-Vascular Plants (2+3) n
Structure, function, comparative development, taxonomy, phylogeny and life histories of non-vascular cryptogams (algae, excluding blue greens, fungi, lichens, mosses and hepatics). Laboratory fee: $20.00. (Prerequisite: BIOL 239. Next offered: 1991-92.)

BIOL 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: $20.00. (Prerequisite: BIOL 239. Next offered: 1991-92.)

BIOL 342 4 Credits Spring
Microbiology (3+3) n
Morphology and physiology of microorganisms (viruses, bacteria, fungi, algae and protozoans). The role of these organisms in the environment and their relationship to humans. Concepts of immunology. Laboratory stresses aseptic techniques for handling microorganisms. Laboratory fee: $20.00. (Prerequisites: BIOL 105X, 106X.)

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: $20.00. (Prerequisites: A year each of college chemistry and biology. Next offered: 1992-93.)

BIOL 362 4 Credits Fall
Principles of Genetics (3+3) n
Principles of inheritance; physico-chemical properties of genetic systems. Laboratory fee: $20.00. (Prerequisites: BIOL 105X, 106X.)

BIOL 382 3 Credits Alternate Fall
Marine Fishes of Alaska (2+3)
Taxonomy, recognition, distribution, life history and ecological relationships of marine fishes of Alaska will be studied. Life history traits that make species susceptible to commercial exploitation, changes in climate, ocean circulation or pollution will be emphasized. (Prerequisites: BIOL 105X, 106X and 222. Next offered: 1992-93.)

BIOL 384 3 Credits Alternate Spring
Freshwater Fishes of Alaska (2+3)
Life histories of Alaskan freshwater fish emphasizing species sought by fishermen. Reproduction, age, growth, migration, food, inter- relationships and habitat requirements. (Prerequisites: BIOL 105X and 106X or permission of instructor. Next offered: 1991-92.)

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. Lab emphasizes identification. Laboratory fee: $20.00. (Prerequisites: BIOL 105X, 106X, 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/laboratory techniques. Laboratory fee: $20.00. (Prerequisites: BIOL 105X, 106X and 271, or permission of instructor; BIOL 473 recommended. Next offered: 1992-93.)

BIOL 414 4 Credits Fall
Environmental Physiology (3+3) n
Functional variations and relationships among animals in various environments; respiration, cardiovascular systems, metabolism, temperature regulation, osmoregulation excretion, nerve and muscle function. Laboratory fee: $20.00. (Prerequisites: BIOL 210, CHEM 106X and 321 or permission of instructor.)

BIOL 418 4 Credits Alternate Spring
Developmental Biology (3+3) n
Morphological and molecular aspects of development of multicellular organisms, with emphasis on the regulation of morphogenesis. Laboratory stresses experimental study of vertebrate embryos. Laboratory fee: $20.00. (Prerequisites: BIOL 105X, 106X, 210 or permission of instructor. Next offered: 1991-92.)

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: $20.00. (Prerequisites: BIOL 222, and either BIOL 205, or 317; or permission of instructor.)

BIOL 426 3 Credits Spring
Ornithology (2+3) n
Evolution, anatomy, physiology, distribution, migration, breeding biology of birds, their classification and identification. Laboratory fee: $20.00. (Prerequisites: BIOL 222, and either 205 or permission of instructor. Concurrent enrollment in BIOL 479 recommended.)

BIOL 427 3 Credits Alternate Fall
Ichthyology (2+3) n
Major groups of fishes, emphasizing fishes of northwestern North America. Classification structure, evolution, general biology, and importance to man. Laboratory fee: $20.00. (Prerequisites: BIOL 222, and either BIOL 205 or 317 or permission of instructor. Next offered: 1991-92.)

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 techniques of behavioral observation and analysis. Laboratory fee: $20.00. (Prerequisites: BIOL 210, 271; or permission of instructor; Recommended: BIOL 308.)

BIOL 442 5 Credits Alternate Fall
Bacteriology and Immunology (3+6) n
Morphology, physiology and systematics of bacteria. Microbial pathogenesis and concepts of immunology. Laboratory fee: $20.00. (Prerequisites: BIOL 342, CHEM 321 or permission of instructor. Next offered: 1992-93.)

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: $20.00. (Prerequisites: BIOL 342, 271, or 442; or permission of instructor.)

BIOL 444 3 Credits Alternate Fall
Reproductive Biology (3+0)
Comparative physiology, endocrinology, behavior and ecology of reproduction in mammals and birds. Hormonal control of reproductive function and behavior; seasonal rhythms, energetics, and life histories of reproduction. Although primarily comparative, aspects of human reproductive function and health covered. (Prerequisite: BIOL 111, 112, and 210.)

BIOL 445 4 Credits Fall
Molecular Evolution (3+3)
(Same as CHEM 445)
Structure, function and evolution of hereditary molecules (nucleic acids). (Prerequisite: BIOL 362.)

BIOL 471 3 Credits Spring
Population Ecology (3+0) n
Biology of populations of plants and animals, including population structure, natality, mortality, population growth, regulation of population size, population interactions in herbivory, predation, and parasitism. (Prerequisite: BIOL 271.)

BIOL 472 3 Credits Fall
Communities and Ecosystems (3+0) n
Structure of plant and animal communities and their organization. Structuring forces of competition, predation, herbivory, mutualisms, and the flow of energy and nutrients. Latitudinal gradients in species richness and biogeography. (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: $20.00. (Prerequisites: BIOL 271, CHEM 106X or permission of instructor.)

BIOL 474 4 Credits Alternate Fall
Plant Ecology (3+3) n
Principles and contemporary topics in plant ecology. Autecology, community ecology, ecosystem ecology and evolutionary ecology. Laboratory fee: $20.00. (Prerequisites: BIOL 239, BIOL 271, STAT 301. Next offered: 1992-93.)

BIOL 475 2 Credits Alternate Fall
Plant Communities of Alaska-Field Course (1+3)
Identification of vascular and non-vascular plants and the processes affecting the structure and evolution of Alaskan plant communities. Field trips to the plant communities of interior Alaska. Laboratory fee: $20.00. (Prerequisites: BIOL 239, permission of instructor. Next offered: 1991-92.)

BIOL 477 3 Credits Alternate Spring
Ecology of Streams and Rivers (3+0)
Physical, chemical and (especially) biological aspects of stream and river ecosystems. Considerations of methods used in running water research and management of streams and rivers. (Prerequisites: BIOL 271 and 473 recommended or permission of instructor. Materials fee: $20.00. (Next offered: 1992-93.)

BIOL 478 2 Credits Spring
Field Ecology (0+6) n
An intensive experience in the collection and interpretation of ecological data through concentrated study for 10-12 days in early May. Students engage in the design, execution, and analysis of field projects. Course is graded pass/fail. Field trip fee to be announced. Laboratory fee: $20.00. (Prerequisites: BIOL 271, 471 or 472 [may be taken concurrently93], and permission of instructor.)

BIOL 479 2 Credits Spring
Ornithology Field Trip (0+6) n
Techniques of field ornithology, emphasizing identification of birds and bird-habitat relationships. 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: $20.00. (Prerequisites: BIOL 426 [may be taken concurrently] and permission of instructor.)

BIOL 480 3 Credits 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: 1991-92.)

BIOL 601 3 Credits Alternate Spring
Radioisotopic Techniques (2+3)

BIOL 602 3 Credits Fall
Research Design (3+0)

BIOL 611J 3 Credits As Demand Warrants
Fish Physiology (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 625 3 Credits Alternate Spring
Physiological Ecology: Energetics and Nutrition (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 649J 3 Credits As Demand Warrants
Molecular Genetics (3+0)

BIOL 650 3 Credits Fairbanks, Alternate Fall
Fish Ecology (2+3) Juneau, As Demand Warrants

BIOL 670 3 Credits Alternate Fall
Ecological Genetics (2+3)

BIOL 672 3 Credits Alternate Fall
Ecosystem Processes (2+0+2)

BIOL 675 3 Credits Alternate Fall
Plant Physiological Ecology (2+3)

BIOL 677 3 Credits Spring
Advanced Topics in Plant Ecology and Systematics (3+0)

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)

Business Administration

Admittance to upper division School of Management courses, except BA 301, 331 and 332, is 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. Any exceptions require approval of the BA department head.

BA 151 3 Credits Fall, Spring
Introduction to Business (3+0)
Business organization, nature of major business functions such as management, finance, accounting, marketing, personnel administration. Opportunities and requirements for professional business careers.

BA 160 3 Credits Fall
Tourism Principles and Practices (3+0)
Forces which influence international and domestic hospitality, leisure, travel, and recreation industries. Socio-economic models and measure of regional impact, demand, and supply.

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: AIS 101. Next offered: 1991-92.)

BA 253 1-3 Credits Fall, Spring, Summer
Internship in Business (0+1-3)
Supervised work experience in an approved position related to the student's career interests or objectives. Number of credits depends on type of position time worked. No student can count more than eight internship credits towards a degree. (Prerequisite: Approval of program or department head.)

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 includes: Advanced leadership development and enrichment seminars. (Prerequisite: Junior standing.)

BA 307 3 Credits Fall
Personnel Management (3+0)
Introduction to management principles and 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. (Prerequisite: Junior standing.)

BA 317W 3 Credits Fall
Employment Law (3+0)
Basic personnel and human resource management law, including the major federal laws affecting personnel management and state employment laws including Alaska. (Prerequisites: BA 301, 307 or concurrent enrollment in BA 307.)

BA 325 3 Credits Fall, Spring
Financial Management (3+0)
Methods of corporate financial planning and control, asset management, capital budgeting, and financial markets and instruments. (Prerequisites: ACCT 102, ECON 200, STAT 200. Highly recommended, MATH 262 or equivalent and ECON 227.)

BA 326 3 Credits Spring
Principles of Advertising (3+0)
(Same as J-B 326)
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)
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, 307.)

BA 330 4 Credits Fall, Spring
The Legal Environment of Business (4+0)
The judicial system, legal processes, administrative procedures, law of torts, contract and agency government regulation of business, business ethics, corporate social responsibility and the uniform commercial code. (Prerequisite: Junior standing or permission of the Business Administration Department Head.)

BA 331 3 Credits Fall, Spring
The Legal Environment of Business (3+0)
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, Spring
Business Law (3+0)
Legal principles essential to a business person. 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, 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. Also available via Independent Learning. (Prerequisites: ACCT 102, ECON 200, STAT 200.)

BA 350 3 Credits Fall
Introduction to Real Estate and Land Economics (3+0)
Processes and considerations that influence decisions of individuals and groups concerning real estate investment and utilization. Functions of various types of real estate operators. (Prerequisite: Junior standing or permission of instructor.)

BA 360 3 Credits Fall, Spring
Production/Operations Management (3+0)
Production management field with an emphasis on the design and management of efficient manufacturing and operating systems including the process of converting, or manufacturing resources into goods, and activities associated with the production of goods and services. Topics include productivity and quality, product design and development, resource-requirements planning, facility and distribution issues, process technology, automation and job design, materials and inventory management, scheduling and production-activity control, project planning. Materials fee: $20.00. (Prerequisites: Computer literacy, ACCT 101, 102, ECON 200, 227, MATH 161 and 262, STAT 200 or equivalents.)

BA 372 3 Credits Spring
Hotel Administration (3+0)
Practices and concepts 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. (Prerequisite: BA 307.)

BA 375W 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. (Prerequisite: BA 343.)

BA 377 3 Credits Alternate Fall
Food and Beverage Management (3+0)
Development of a successful food and beverage system from its inception to operation. Menu planning, purchasing, preparation, service, and food beverage cost control. (Prerequisite: BA 307. Next offered: 1992-93.)

BA 378 3 Credits Fall
Passenger Transportation Management (3+0)
Modern forms of passenger transportation with emphasis on carriers presently operating in Alaska and future development of transportation in Alaska.

BA 390 3 Credits Fall
Organizational Theory and Behavior (3+0)
Behavior of individuals and small groups within organizations, including motivation, leadership, communications, group dynamics, organizational development, and conflict management.

BA 418 3 Credits Spring
Simulation Modeling for Decision Making (3+0)
Concepts of computer simulation, probability distributions, modeling principles and the language STELLA from basics to modeling a reasonably complex operating system and making conclusions about the system. (Prerequisites: AIS 101 or equivalent, ECON 227, MATH 262, ACCT 102; BA 360 is recommended.)

BA 423 3 Credits Fall
Investment Management (3+0)
Investing in marketable securities for the individual. Determination of value, analysis of growth, technical analysis, and portfolio management. Materials fee: $10.00. (Prerequisite: BA 325 or equivalent.)

BA 425W 3 Credits Spring
Advanced Corporate Financial Problems (3+0)
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. Topics are those most timely to the Alaskan economy. Materials fee: $20.00. (Prerequisites: BA 325.)

BA 436 3 Credits Spring
Consumer Behavior (3+0)
Communication in marketing; culture and its effects on product discrimination. Social class, personality, symbolism, and persuasion from the marketing manager's point of view. Organizational influences on corporate buyers and the impact of buyer behavior on the strategy and tactics of marketing management. (Prerequisites: BA 343, ECON 227, STAT 200.)

BA 441 3 Credits Spring
Promotion Management (3+0)
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)
Comparisons of foreign markets with domestic markets. Market enlargement via direct export, direct investment, or joint ventures. Foreign pricing, communications, distribution, and advertising viewed in terms of marketing management and research. (Prerequisite: BA 343.)

BA 445W 3 Credits Fall
Marketing Research (3+0)
Basic processes and tools of marketing research with emphasis on utilization of research findings as an integral part of the managerial decision-making process. Technique of data-gathering and analysis to solve a marketing problem. (Prerequisites: BA 343, 436.)

BA 447 3 Credits Spring
Compensation Management (3+0)
Theory and practice of wage and salary, benefits and risk management. Planning, administration, auditing, adjusting and budgeting for compensation and risk. (Prerequisites: BA 307, 327.)

BA 453 3 Credits Fall, Spring
Internship in Business Administration (0+var.)
A supervised practical work experience to enable students to apply their coursework in a business environment. Admission dependent upon approved sponsorship arrangements. (Prerequisites: Senior standing and permission of instructor.)

BA 456W 3 Credits Spring
Small Business Management (3+0)
Operations and special problems of the small business with emphasis on both existing firms and new ventures. 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 457 3 Credits Spring
Training and Management Development (3+0)
Theory and practice of employee training programs, needs assessments, learning theories, instructional design, training techniques and evaluation, management development and career development techniques and practices. (Prerequisites: BA 307, 317.)

BA 460W 3 Credits Fall
International Business (3+0)
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. (Prerequisites: Senior standing; all 300 level requirements completed.)

BA 461 3 Credits Spring
International Finance (3+0)
Foreign investment projects including foreign capital markets, financing exports, hedging foreign exchange risks, and capital budgeting in an international setting. (Prerequisite: BA 325.)

BA 462O 3 Credits Fall, Spring
Administrative Policy (3+0)
An advanced case study course. Focuses on 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 business administration, accounting and economics 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. (Prerequisite: BA 307. Next offered: 1991-92.)

BA 471 3 Credits Alternate Spring
Tourism Seminar (3+0)
A senior seminar examining all areas of the travel-tourism industry. Lecturer, guest industry speakers, and the case study method are utilized. (Prerequisites: Admission by instructor's permission and upper division standing. Next offered: 1992-93.)

BA 475 3 Credits As Demand Warrants
Transportation and Logistics (3+0)
Transportation systems components, systems planning, multimode systems, interactions among components and between the transportation system and its environment. Special consideration is given to Alaskan transportation problems by experienced specialists. (Prerequisites: STAT 200, 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. (Prerequisites: BA 325, 331, 360 and 445.)

BA 604 3 Credits Fall
The Legal Environment of Business (3+0)

BA 607 3 Credits As Demand Warrants
Human Resources Management (3+0)

BA 610 3 Credits Spring
Production/Operations Management (3+0)

BA 617 3 Credits Spring
Organizational Theory and Behavior (3+0)

BA 625 3 Credits Spring
Financial Management (3+0)

BA 643 3 Credits Fall
Marketing Management (3+0)

BA 660 3 Credits Fall
Seminar in Production Management (3+0)

BA 670 3 Credits Spring
Seminar in Multinational Business Management (3+0)

BA 680 3 Credits Fall
Seminar in Finance (3+0)

BA 683 3 Credits Spring
Seminar in Marketing (3+0)

BA 690 3 Credits Spring
Administrative Policy (3+0)

BA 691 3 Credits Fall
Sources of Business Information (3+0)

Chemistry

CHEM 075 3 Credits As Demand Warrants
Introduction to Chemical Sciences (3+0)
Units of measurement, atomic and molecular structure, chemical bonding, metabolism, radioactivity, oxidation-reduction reactions, solutions, acids and buffers. For the non-science major.

CHEM 100X 4 Credits Spring
Chemistry and the Modern World (3+3) n
Fundamentals of chemistry with an emphasis on the impact of chemistry and the chemical industry on society and the environment. May be used to fulfill part of the natural science requirement or as preparation for Chem 105X. For non-science majors. Laboratory fee: $15.00.

CHEM 103X 4 Credits Fall
Basic General Chemistry (3+3) n
Fundamentals of chemistry including historical and descriptive aspects as well as basic mathematical concepts. Fulfills the laboratory part of the natural science requirement and prepares the student for CHEM 105X. Laboratory fee: $15.00. (Prerequisite: High school algebra.)

CHEM 104X 4 Credits Spring
Beginnings in Biochemistry:
A Survey of Organic Chemistry and Biochemistry (3+3) n
Fundamentals of chemistry as applied to biological systems. Bridges the gap between a general chemistry course and biochemical concepts of other health-related sciences. Recommended for health-science degree candidates and non-science majors interested in the central role of chemistry in life. May be used to meet the general laboratory science requirement or for preparation for CHEM 105X. (Prerequisite: CHEM 103X or consent of instructor.)

CHEM 105X 4 Credits Fall, Spring
CHEM 106X 4 Credits Fall, Spring
General Chemistry (3+3) n
CHEM 105X-106X, together, constitute the standard one-year engineering and science-major general chemistry course with laboratory. CHEM 105X: Measurements, calculations, atomic and molecular structure, chemical reactions and related energy changes. CHEM 106X: Reaction kinetics, equilibrium (including acids and bases), nuclear chemistry, electro-chemistry, chemistry of the elements and an introduction to organic and biochemistry. Laboratory fee: $25.00-30.00. (Prerequisites: For CHEM 105X: high school algebra, high school chemistry or CHEM 103X, or consent of instructor. For CHEM 106X: CHEM 105X.)

CHEM 202 3 Credits Spring
Basic Inorganic Chemistry (2+3) n
Inorganic chemical properties and reactions with special emphasis on the environment. Laboratory includes synthesis, characterization and analysis. Laboratory fee: $15.00. (Prerequisite: CHEM 106X or permission of instructor.)

CHEM 212 3 Credits Fall
Chemical Equilibrium and Analysis (3+0) n
Aqueous chemical equilibrium as applied to chemical analysis, separations, spectrophotometry, potentionmetry, and factors considered in the analytical approach. (Prerequisites: CHEM 106X; 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 106X and MATH 107.)

CHEM 321 3 Credits Fall
CHEM 322 3 Credits 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 106X for CHEM 321; CHEM 321 for CHEM 322.)

CHEM 324 3 Credits Fall, 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. (Prerequisite: 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 106X, MATH 202, PHYS 104 or 212 or permission of the instructor; CHEM 331 for CHEM 332.)

CHEM 402 3 Credits Spring
Inorganic Chemistry (3+0) n
Application of physical chemistry to the study of the elements and their compounds. Bonding, periodic properties and coordination chemistry. (Prerequisite or corequisite: CHEM 332.)

CHEM 412 3 Credits Fall
Instrumental Analytical Methods (3+0) n
Theory, capabilities and limitations of instruments used in chemical analysis. Subjects include chromatography, mass spectrometry, potentiometry, optical spectroscopy, and nuclear magnetic resonance. (Prerequisites: CHEM 212 and 213; Corequisite: CHEM 332.)

CHEM 413 3 Credits Spring
Analytical Instrumental Laboratory (1+6) n
Quantitative instrumental measurements with atomic and molecular absorption spectrometry, gas and liquid chromatography and potentiometry. Laboratory fee: $15.00. (Prerequisites: CHEM 212, 331, 412.)

CHEM 434 3 Credits Fall, Spring
Physical Instrumental Laboratory (1+6) n
Quantitative instrumental measurements: calorimetry, conductance, polarimetry; IR, NMR, x-ray, and Raman spectroscopy. Laboratory fee: $15.00. (Corequisite: CHEM 332.)

CHEM 445 4 Credits Fall
Molecular Evolution (3+3)
(Same as BIOL 445)
The study of structure, function and evolution of hereditary molecules (nucleic acids). (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. (Prerequisite: CHEM 322; CHEM 331 recommended or permission of the instructor.)

CHEM 452 3 Credits Spring
Biochemistry Laboratory (1+6)
Experimental manipulation and observation of enzymes, proteins, and nucleic acids, using chromatographic, spectroscopic, electrophoretic, and other techniques. Laboratory fee: $15.00 (Prerequisite: CHEM 324 and 451.)

CHEM 602 3 Credits **Alternate Fall**
Advanced Inorganic Chemistry (3+0)

CHEM 606 3 Credits **Alternate Fall**
Atmospheric Chemistry (3+0)

CHEM 612 3 Credits **Alternate Fall**
Advanced Analytical Chemistry (3+0)

CHEM 621 3 Credits **Alternate Fall**
Enzymology and Bio-Organic Chemistry (3+0)

CHEM 622 3 Credits **Alternate Fall**
Advanced Organic Chemistry II (3+0)

CHEM 631 3 Credits **Alternate Spring**
Advanced Physical Chemistry (3+0)

CHEM 632 3 Credits **Alternate Spring**
Molecular Spectroscopy (3+0)

CHEM 652 3 Credits **Alternate Spring**
Advanced Biochemistry (3+0)

CHEM 653 3 Credits **Alternate Spring**
Prokaryotic Molecular Biology (3+0)

CHEM 654 3 Credits **Alternate Fall**
Protein Structure and Function (3+0)

CHEM 660 3 Credits **Spring**
Chemical Oceanography (3+0)
(Same as MSL 660)

CHEM 662 3 Credits
Biochemical and Molecular Biology Research Techniques (0+3)

CHEM 673 3 Credits **Alternate Spring**
Bioenergetics (3+0)

CHEM 688 0-1 Credits
Biochemical and Molecular Biology Seminar (1+0)

Chinese

For information on studying in China, see Study Abroad.

CHNS 101 3 Credits **Fall**
CHNS 102 3 Credits **Spring**
Elementary Chinese I and II (3+0) h
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 **Spring**
Intermediate Chinese I and II (3+0) h
Continuation of Chinese 102. Increasing emphasis on reading ability and cultural material. Conducted in Chinese. (Prerequisite: For CHNS 201, CHNS 102 or equivalent; For CHNS 202, CHNS 201.)

Civil Engineering

A $25.00 per semester student computing facility user fee is assessed for School of Engineering courses. This fee is in addition to any lab/material fees.

CE 112 3 Credits **Spring**
Elementary Surveying (2+3)
Basic plane surveying; use of transit, level, theodolite, and total station. Traverses, public land system, circular curves, cross- sectioning and earthwork. (Prerequisite: MATH 108.)

CE 326 4 Credits **Fall, Spring**
Introduction to Geotechnical Engineering (3+3)
Fundamentals of geotechnical engineering including 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, 341, CE 334 or permission of the instructor.)

CE 334 3 Credits **Fall**
Properties of Materials (2+3)
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 **Fall**
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, Spring**
EIT Exam
Complete the EIT application and take the State of Alaska Engineering-in-Training Exam in the same semester of course registration. (Prerequisite: Senior standing in civil engineering.)

CE 402 3 Credits **Fall**
Introduction to Transportation Engineering (3+0)
Transportation systems, planning, design parameters, demand and mode specific consideration. Laboratory fee: $10.00. (Prerequisite: 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)
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 used. (Prerequisite: Permission of the instructor. Next offered: 1991-92.)

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. Metes and bounds descriptions and platted subdivisions. (Prerequisite: CE 112 or permission of instructor.)

CE 422 3 Credits **Spring**
Foundation Engineering (3+0)
Bearing capacity of soils and effects of settlements on structure. Design of footings and rafts, pile and pier foundations, retaining walls and anchored bulkheads. Foundations on frozen soils, and construction problems in foundation engineering. (Prerequisites: 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. (Prerequisites: CE 326, ES 301.)

CE 431 3 Credits **Spring**
Structural Engineering I (2+3)
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 (2+3)
Concepts of analysis/design using advanced methods of structural analysis and computer techniques. Effects of material behavior, and modes of failure (building, bending, shear, connections) on design decisions examined. (Prerequisite: CE 431.)

CE 433 3 Credits Fall
Reinforced Concrete Design (2+3)
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. Design of basic components of solid and laminated timber, connections, arches, pole framing, diaphragms, stressed-skin construction, and timber shells. (Prerequisites: ES 331 and CE 431.)

CE 436 3 Credits Spring
Structural Steel Design (2+3)
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)
System design principles for large-scale constructed facilities. Application of ethics, liability and legal principles to professional practice. Emphasis on teamwork and leadership. (Prerequisite: Last year of civil engineering B.S. program.)

CE 441 4 Credits Spring
Environmental Engineering (3+3)
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. Solid waste management and air pollution control. Laboratory fee: $10.00. (Prerequisite: ES 341 or permission of instructor.)

CE 442 3 Credits Fall
Environmental Engineering II (3+0)
Advanced topics involving 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 standing in civil engineering.)

CE 445 3 Credits Alternate Spring
Engineering Hydrology (2+3)
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. Next offered: 1991-92.)

CE 446 3 Credits Alternate 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. Next offered: 1991-92.)

CE 470 1 Credit Fall, Spring
Civil Engineering Internship (0+3)
Supervised work experience in engineering organizations. Assignments individually arranged with cooperating organizations and agencies. (Prerequisites: Senior standing, permission of department coordinator.)

CE 603 3 Credits Fall, 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 Alternate Fall
Advanced Water Resources Engineering (3+0)

CE 662 3 Credits Alternate Spring
Open Channel and River Engineering (3+0)

CE 663 3 Credits Alternate Spring
Groundwater Dynamics (3+0)

CE 676 3 Credits Alternate Fall
Coastal Engineering (3+0)

CE 681 3 Credits Alternate Spring
Frozen Ground Engineering (3+0)

CE 682 3 Credits Alternate Years
Ice Engineering (3+0)

CE 683 3 Credits Alternate Fall
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/Practitioner

CHP 082 2 Credits As Demand Warrants
Community Health Aide Pre-session I
Assists the newly employed Community Health Aide to function in the village clinic until he/she enters Session I. Patient evaluation, use of the manual, reporting patients, medicines and lab tests. Emergency care is included if students have not had emergency trauma training. (Prerequisite: Employment by the health corporation as a community health aide or permission of instructor.)

CHP 108 3 Credits As Demand Warrants
Nurse Aide/Patient Care Assistant Training
Basic skills necessary to assist nurses and to be efficient health care team members. Supervised work in conjunction with health care professionals in hospitals and agencies appropriate for these experiences. (Prerequisite: High school diploma or permission of instructor.)

CHP 120 4 Credits As Demand Warrants
Community Health Aide, Session I
Focus on beginning body of knowledge and skills designed for the CHA to function in the village clinic under the medical supervision of a physician at the regional hospital. Topics emphasized include anatomy, disease concepts, patient evaluation, patient education and treatment plan, use of the manual, M.D. referral, medicines, medical emergencies, common medical problems, prenatal care, immunizations and clinic management and health administration. Introductory courses are taught in pediatrics, communicable diseases, health surveillance and promotion, mental health and substance abuse. Lab skills and clinical training time are scheduled fifty percent of the time. (Prerequisite: Employment by the health corporation as a CHA or permission of the instructor.)

CHP 121 4 Credits As Demand Warrants
Community Health Aide, Session II
Session I material is reviewed and reinforced, especially patient evaluation skills and emergency care. Focus on prevention, especially the child-bearing cycle, prenatal care, family planning, gynecology/obstetrics, well-child care, and adolescence. Topics of pediatric problems, cardiovascular problems, nutrition, health education, health surveillance and promotion, environmental health, dental health, and mental health are included. Upon completion, the CHA is prepared to conduct basic prenatal and well-child exams, recognize and manage most common minor problems seen in these areas and make appropriate referrals as necessary. Lab skills and clinical training time are scheduled fifty percent of the time. (Prerequisite: CHP 120.)

CHP 122 4 Credits As Demand Warrants
Community Health Aide, Session III
Session II material is reviewed and reinforced, especially patient evaluation skills, emergency care, prenatal and well-child care. Additional topics include chronic patient care, dental disease, sexually transmitted diseases, health education, accident prevention, adult health surveillance and mental health. Health problems in each body system are reviewed and discussed in greater depth. Attention is given to the CHA's ability to differentiate between normal and abnormal, determine the relative seriousness of the patient's condition and to make appropriate judgements regarding the nature, locale and immediacy of treatment. Lab skills and clinical training time are scheduled fifty percent of the time. (Prerequisite: CHP 121.)

CHP 123 14 Credits As Demand Warrants
Community Health Aide Field Experience
Students work on-the-job in a village clinic to practice and develop the skills learned in Sessions I, II and III. During this time the community Health Aide consults with a referral physician on a daily basis. Additionally, a variety of health professionals make field trips to the village to provide health care with the CHA. Learning contracts from Sessions I, II and III and the evaluation of CHA skills are also accomplished during the CHA Field Experience. A minimum of 600 hours of village patient care is required. (Prerequisite: CHP 120.)

CHP 124 2 Credits As Demand Warrants
Community Health Aide Preceptorship
Students practice direct patient care, including history taking, physical exam, patient assessment and patient plan. Students receive 30 hours of experience in acute care, emergency care, prenatal care, well-child care, and chronic patient follow-up working with a midlevel practitioner or an M.D. Additional experiences are scheduled with the referrral center departments, including pharmacy, lab, supply, eye care, social services, mental health, public health nursing, maternal child health, etc. (Prerequisite: CHP 122.) **CHP 202 1-3 Credits As Demand Warrants**
Emergency Care for Community Health Practitioners
Covers methods of evaluation and ersponse to a variety of emergency situations that may arise in the village setting. Skills taught include emergency assessment and treatment, administration of intravenous fluids, application of splints, bandages and transportation of the injured. (Prerequisite: CHP 120.)

CHP 203 1-3 Credits As Demand Warrants
Clinical Update for Community Health Practitioners
Review, update and reinforcement of knowledge and skills taught in CHP 120, 121 and 122. Emphasis is on patient evaluation skills, use of the manual, patient treatment plan, medicines, prenatal care, well-child care, chronic patient care and emergency care. Clinical training is provided. (Prerequisite: CHP 120.)

CHP 206 1-3 Credits As Demand Warrants
Mental Health and Substance Abuse
Instruction in listening skills, drug therapy and family dynamics for crisis intervention, long term care in the area of mental health, and substance abuse. Other topics include the mentally ill patient, the substance abuser, the co-dependent, and prevention activities for the village. (Prerequisite: CHP 120.)

CHP 207 1-3 Credits As Demand Warrants
Maternal and Infant Health
Review of the anatomy of the reproductive system, family planning, pregnancy, fetal development, prenatal care, prenatal education, emergency delivery, post-partum care for mother and baby, and well-child evaluations and immunizations. (Prerequisite: CHP 120.)

CHP 208 1-3 Credits As Demand Warrants
Communicable Diseases
Expands concepts of CHP 112 in relation to diagnosis, management and prevention of sexually transmitted diseases. Skills taught include male and female genitalia exam, pelvic exam, pap smear, gonorrhea culture and chlamydia culture. Prevention and patient education are emphasized. (Prerequisite: CHP 120.)

CHP 211 1-3 Credit As Demand Warrants
Health Education
Methods and philosophy of health education, use and sources of audio-visual materials, presentation planning and participation in school and community health programs are included. A variety of teaching methods including role playing for individual and group presentations permit CHPs to practice their health education knowledge and skills. (Prerequisite: CHP 120.)

Computer Applications

CAPS 100 1 Credit As Demand Warrants
Introduction to Personal Computers (1+0)
Overview of the three most popular uses of the personal computer: word processing, data base management and electronic spreadsheets. Provides a basic understanding of how the computer works and how it can aid the student at school and work. Materials fee: $10.00.

CAPS 102 3 Credits As Demand Warrants
Programming in BASIC (3+0)
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. Recommended as a first programming language for non-majors. (Prerequisite: MATH 070 or 105 or equivalent.)

CAPS 103 1-3 Credits As Demand Warrants
Computer Survey (1+0 to 3+0)
An introduction to the world of computers emphasizing microcomputers. Provides computer terminology and how to use computers as a tool to make work easier and to extend the reach of the mind.

CAPS 104 3 Credits As Demand Warrants
Introduction to Computer Programming (3+0)
Introductory coverage of a specific programming language. (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 FORTRAN. Emphasis on problem-solving through analysis, flowcharting, testing and debugging and documentation. (Prerequisite: Math 070 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)
Fundamental structure of the computer language PASCAL (up to data types of single dimension arrays). Preparation of 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 an important part of course. Materials fee: $10.00-$15.00. (Prerequisite: Typing skill required.)

CAPS 111 2 Credits As Demand Warrants
Computer Software for Beginners (2+0)
Overview of computer hardware and software. Demonstrations and hands-on experience with telecommunications, word-processing, spreadsheets, data base management and tutorial software.

CAPS 120 2 Credits As Demand Warrants
Introduction to LOGO (2+0)
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)
Extensive coverage of a specific microcomputer application.

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)
Training and practice in using APPLEWORKS on an apple IIe covers word processing, electronic spreadsheet and data base capabilities. Materials fee: $10.00-$15.00.

CAPS 130 3 Credits As Demand Warrants
Introduction to BASIC Programming (3+0)
Arithmetic, logic, graphics, and file statements of Applesoft BASIC. Materials fee: $10.00-15.00.

CAPS 135 3 Credit As Demand Warrants
Introduction to LOTUS 1-2-3 (3+0)
In-depth presentation of spreadsheet concepts using the four major parts of 'LOTUS 1-2-3': worksheets, graphics, databases and macros. Materials fee: $10.00.

CAPS 140 3 Credits As Demand Warrants
Introduction to PASCAL (3+0)
Programming in PASCAL using Apple microcomputers with UCSD PASCAL.

CAPS 145 1 Credit As Demand Warrants
Introduction to MULTIMATE (1+0)
Preparation and revision of standard or customized business correspondence and reports using a contemporary, versatile software program and microcomputer. For business managers, administrators, office workers and others who require a high level of word processing productivity. Students should bring two (2) double-density 5-¼ inch diskettes to class. Materials fee: $10.00.

CAPS 150 3 Credits As Demand Warrants
Computer Business Applications (3+0)
Using microcomputers in a business. Includes word processing, spreadsheets, data bases, graphics, project management and telecommunications. Use of each application in a business environment will be shown. No previous experience necessary. Materials fee: $10.00.

CAPS 160 1 Credit Fall, Spring
Introduction to Word Processing (1+0)
Use of various software to enter text for a document, revise the text once it has been entered and print the text in a professional form.

CAPS 181 2 Credits As Demand Warrants
Introduction to Microcomputers at Home (2+0)
Overview of home computers, uses, operations and programs for typical consumer. Does not satisfy certificate or degree requirements.

CAPS 182 2 Credits As Demand Warrants
Introduction to Microcomputers in Small Businesses (2+0)
Microcomputers used in small business or professional practice by owners or employees. Overview of computers, uses and means of evaluation when purchasing equipment. Does not satisfy certificate or degree requirements.

CAPS 200 2 Credits (2+0)
Programming in Assembly Language (2+0)
Programming the 6502 (Apple) computer in ASSEMBLY and MACHINE language. Topics included are 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. (Prerequisitesd: BASIC programming experience and Math 070 or equivalent Algebra II.)

CAPS 221 1-3 Credits As Demand Warrants
Microcomputer Accounting (1-3+0)
(Same as ABUS 221)
Computer processing of accounting transactions. Software packages, microcomputer systems and hardware, computer terminology, system analysis, and actual computer operations in accounting.

CAPS 260 1 Credit Fall, Spring
Advanced Word Processing (1+0)
Advanced concepts of word processing using various softwares. (Prerequisite: Keyboard speed of 45 wpm.)

Computer Science

CS 101 3 Credits Fall, Spring
Computers and Society (3+0)
Computer literacy for everyone. Overview of computing machines and automatic data processing. Interaction between social institutions and automated decision making. Some programming for understanding, not for skill development. (Prerequisite: Two years of high school mathematics, including at least one year of algebra.)

CS 103 3 Credits Fall
Introduction to Computer Programming (2+3)
Programming for non-majors and for those computer science students without the background for CS 201. Concepts of structured programming and algorithm design within the syuntax of the PASCAL programming language. (Prerequisite: One year of high school algebra.)

CS 201 3 Credits Fall, Spring
CS 202 3 Credits Fall, Spring
Computer Science I and II (3+0)
The discipline of computer science including problem solving, algorithm development, structured programming, top-down design, good programming style, concurrent programming, and elementary data structures. Concepts implemented with extensive programming experience in a structured language. (Prerequisites: For CS 201: one year high school level programming, ES 201 or CS 103 and mathematics placement at the 200 level. For CS 202: CS 201.)

CS 205 3 Credits Spring
Programming in C (3+0)
The C programming language for students with some experience in other programming languages such as PASCAL or FORTRAN. (Prerequisite: One year high school programming, CS 103, 201, or ES 201.)

CS 271 3 Credits As Demand Warrants
Scientific Programming in FORTRAN (3+0)
Syntax and principles of FORTRAN. 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, 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. (Prerequisite: CS 201.)

CS 302 3 Credits As Demand Warrants
Systems Programming (3+0)
Advanced assembly language programming including privileged instructions and system services. Applications to asynchronous I/O, process control and communication, device drivers and file management. (Prerequisite: CS 301. Next offered: 1991-92.)

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. (Prerequisite: CS 202.)

CS 321 3 Credits Spring
Operating Systems (3+0)
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)
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. (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. (Prerequisites: CS 281 and MATH 314. Next offered: 1992-93.)

CS 401 3 Credits Alternate Fall
Software Engineering (3+0)
Software design as an engineering discipline. Project planning, proposal writing, and management. Program design, verification, and documentation. Additional topics from object- oriented design, real time design, and validation. (Prerequisites: CS 311, 321. Next offered: 1991-92.)

CS 402OW 3 Credits Spring
Senior Project and Professional Practice (3+0)
Students work on group projects in a simulated computer industry environment and produce appropriate documentation and reports. Nature, ethics, and legal considerations of the computer science profession discussed. Additional topics include project management, design methodologies, technical presentation, human-machine interface and programming team interactions. (Prerequisites: CS 311, 321 and senior standing.)

CS 405 3 Credits **Alternate Fall**
Introduction to Expert Systems (3+0)
Problem selection, knowledge acquisition, representation, and programming, expert system shells, and validation and evaluation of expert systems. Case study of existing expert systems. Individual projects. Materials fee: $10.00. (Prerequisite: CS 311 or permission of the instructor. Next offered 1992-93.)

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 421 3 Credits **As Demand Warrants**
Operating System Implementation (3+0)
Detail level study of operating system functions and associated implementation with the aid of C language source code for a version of UNIX. Operating system tuning methods and security. Multiprocessor and other advanced operating system concepts. Programming and evaluation of operating system segments as projects. (Prerequisite: CS 321.)

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, 321. Next offered: 1992-93.)

CS 431 3 Credits **As Demand Warrants**
Programming Language Implementation (3+0)
Design and implementation of major phases of high level language translators including scanning, parsing, translation, code generation and optimization. Students develop a compiler for a language in a group project which emphasizes good software engineering practices in structured design, testing and documentation. (Prerequisite: CS 331. Next offered: Spring 1992.)

CS 442 3 Credits **Alternate Fall**
Computer Communication and Networks (3+0)
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: 1991-92.)

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: 1992-93.)

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: 1991-92.)

CS 490 1-3 Credits **As Demand Warrants**
Student Internship
Students work on computer science project under the joint direction of a faculty member and participating industry or governmental agency. (Prerequisite: Acceptance in internship program.)

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 610 1 Credit **Yearly**
Culture and the Counselor (1+0)

COUN 611 1 Credit **Yearly**
Theory Building for Counselors (1+0)

COUN 615 3 Credits **Spring**
Foundations of Guidance and Counseling (3+0)

COUN 623 3 Credits **Summer**
Counseling Theories and Applications (3+0)
(Same as PSY 660)

COUN 628 3 Credits **Fall**
Child and Adolescent Psychology (3+0)

COUN 629 3 Credits **Yearly**
Developmentally Appropriate Interventions (3+0)

COUN 634 3 Credits **Fall**
Practicum in Individual Counseling (2+7)

COUN 636 3 Credits **Fall, Spring**
Practicum in School Counseling (2+7)

COUN 646 3 Credits **Alternate Spring**
School Counseling (3+0)
(Same as PSY 646)

COUN 647 3 Credits **Yearly**
Professional Ethics (3+0)

COUN 660 3 Credits **Spring**
Cross-Cultural Counseling (3+0)
(Same as PSY 661)

COUN 665 3 Credits **Fall, Spring**
Practicum in Counseling: Higher Education/Agency (0+9)
(Same as CSP 665)

COUN 674 3 Credits **Spring**
Group Counseling (3+0)
(Same as PSY 674)

COUN 690 1 Credit **Fall, Spring**
Internship (0+3)

Cross Cultural Communication

CCC 104 3 Credits **Fall, Spring**
University Communications (3+0)
(Same as DEVS 104)
Introduces communication skills 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, Spring**
Intensive Reading Development (3+0)
(Same as DEVS 105)
Develops and refines vocabulary, comprehension, and critical reading at the college level. Appropriate strategies for reading a variety of texts and composing essays in relation to them. (Prerequisite: Referral from Rural Student Services.)

Culinary Arts

CAH 105 3 Credits **Fall, Spring**
Principles of Food Service I (3+0)
Food service and the principle variations which students may encounter in the industry; professional standards, kitchen safety, first aid, storeroom operation, kitchen equipment and basic culinary terminology.

CAH 116 1 Credit **As Demand Warrants**
Beginning Cake Decorating I (1+0)
The proper baking and icing of cakes. Topics include basic borders, buttercreme flowers, and leaves. Students decorate a minimum of three cakes. Materials fee: $15.00.

CAH 117 1 Credit **As Demand Warrants**
Intermediate Cake Decorating (1+0)
Advanced methods such as pattern transfer, flowers and borders, wafer paper and chocolate on cakes for decoration, and flow in techniques. For the more advanced cake decorator. Materials fee: $15.00.

CAH 140 6 Credits **Fall, Spring**
Principles of Cooking (6+0)
Teaches basic food service skills in a commercial kitchen environment. Standardized recipes and procedures stressed. End product critiqued daily. Student assignments rotate between a stock and soup station, vegetable station, pantry, and service line and grill. Emphasis on sanitary food handling practices and professional work habits. Uniform cleaning fee: $105.00.

CAH 141 6 Credits **Fall, Spring**
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 covered. Uniform cleaning fee: $105.00.

CAH 145 6 Credits **Fall, Spring**
Principles of Baking (6+0)
Basic commercial baking skills and procedures. Standardized recipes and procedures stressed. End product critiqued daily. Emphasis on sanitary food handling practices and professional work habits. Uniform cleaning fee: $105.00.

CAH 146 6 Credits **Fall, Spring**
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 **Fall, Spring**
Sanitation (1+0)
Sanitation principles essential to commercial kitchen personnel. Successful course completion allows the student to receive certification by the National Institute for the Food Service Industry.

CAH 152 2 Credits **Fall, Spring**
Supervisory Development (2+0)
Problems and challenges that food service supervisors deal with every day. Development of personnel management methods.

CAH 154 2 Credits **Fall, Spring**
Dining Room Service (2+0)
American style table service. Dining room service, management, controls and methods.

CAH 160 2 Credits **Fall, Spring**
Principles of Nutrition (2+0)
Basic principles of nutrition with emphasis on nutrients and their function in relation to human health.

CAH 161 1 Credit **Fall**
Pastry Tube Art (.5+1)
Basic cake and food product techniques including borders, flowers, cake designing, and proper use of pastry tube bags.

CAH 170 2 Credits **Fall, Spring**
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 171 2 Credits **Fall, Spring**
Gourmet Baking (2+0)
Preparation of a wide range of breads, pastries, fancy desserts, French pastry, and simple tortes. Recipes represent traditional methods of baking along with current trends in home entertainment. Materials fee: $45.00.

CAH 172 2 Credits **As Demand Warrants**
Gourmet Asian/Oriental Cooking (2+0)
Preparation and service of Asian/Oriental dishes. Study and use of proper cooking methods emphasized. Students prepare and enjoy a full meal at each class session.

CAH 175 2 Credits **As Demand Warrants**
Introduction to Meat Cutting I (1.5+2.5)
Professional meat cutting for lamb, beef, pork, poultry, and seafood; health regulations using current industry standards; sausage making and meat curing.

CAH 199 1-12 Credits **Summer**
Culinary Arts Workstudy Externship
Practice in a variety of food service operations, learning current cooking methods and techniques. Student evaluations by the externship coordinator and the employer. Enrollment by special permission only.

CAH 242 4 Credits **Fall, Spring**
Food Production II (4+0)
Continuation of CAH 141 with emphasis on ala carte and production cooking. Students prepare foods for the advanced table service class. Foods will represent current trends in the industry with kitchen organization and professional methods stressed. Uniform cleaning fee: $105.00. (Prerequisite: CAH 141.)

CAH 243 4 Credits **Fall, Spring**
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 explored. Uniform cleaning fee: $105.00. (Prerequisite: CAH 242 or permission of instructor.)

CAH 247 4 Credits **Fall, Spring**
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 emphasized. Uniform cleaning fee: $105.00. (Prerequisite: CAH 146 or permission of instructor.)

CAH 248 4 Credits **Fall, Spring**
Bakery Production III (4+0)
Continuation of CAH 247 with emphasis on pastry buffet. Students will produce artistic centerpieces, decorated tortes and cakes, assorted French pastries, assorted petits fours, and assorted candies. Uniform cleaning fee: $105.00. (Prerequisites: CAH 146 and 247 or permission of instructor.)

CAH 250 2 Credits **As Demand Warrants**
Gardé Manger (2+0)
A hands- on experience in buffet. Presentation of hot and cold foods. Students 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)
Formal and informal methods of purchasing, receiving and storing of food and nonfood items in food service operations. Specifications, par inventory systems and controls.

CAH 255 2 Credits **As Demand Warrants**
Food Service Management (2+0)
The management team's responsibility in food service operation. Students 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)
Study and evaluation of the wines of France, Germany, Italy and the California wine producing areas. Focus 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 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

For information on studying at the University of Copenhagen, see Study Abroad.

DNSH 101 5 Credits Fall
DNSH 102 5 Credits Spring
Elementary Danish I & II (5+0) h
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 DNSH 102, DNSH 101.)

DNSH 201 4 Credits Fall
DNSH 202 4 Credits Spring
Intermediate Danish I & II (4+0) h
Continuation of Danish 102. Increasing emphasis on reading ability and cultural material. Conducted in Danish. (Prerequisite: 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. (Prerequisite: 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)
Designed to increase vocabulary substantially and to provide tools for further vocabulary growth.

DEVS 104 1-3 Credits Fall, 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 108 1 Credit As Demand Warrants
Study Skills Lab (1+0)
Improvement of study skills in areas of greatest need on an individual basis in the lab. Topics include time management, listening/notemaking, library research, and memory.

DEVS 110 1 Credit Fall, 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. Political speeches and other media presentation examined. Effective and convincing presentation of one's own ideas include formal and informal logic. Materials fee: $10.00.

DEVELOPMENTAL 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, Spring
English Skills Laboratory (0+3-9)
Individualized instruction in language skills. Open entry/open exit, one credit lab modules in spelling/vocabulary, writing, and grammar usage. Enrollment in one or more based on diagnosed need or desire; may be repeated. Counts as elective credit only; does not fulfill degree requirements in written communications or humanities.

DEVE 070 3 Credits As Demand Warrants
Preparatory College English (3+0)
Instruction in writing to improve students' fluency and accuracy and communication skills. Preparation for ENGL 111. Placement by examination or student decision. Materials fee: $0.00-5.00.

DEVELOPMENTAL 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. Also available via Independent Learning.

DEVM 052 3 Credits Fall, Spring
Alternative Approaches to Math: Basic College Math (3+0)
Basic college mathematics: operations with percents, decimals, fractions and signed numbers, translating word problems, introduction to algebra and geometry, using alternative teaching styles tailored to the specific cultural backgrounds of the students. (Prerequisites: Appropriate placement test scores. Students must meet federal eligibility requirements.)

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. Also available via Independent Learning. (Prerequisite: DEVM 050 or placement.)

DEVM 061 1 Credit Independent Learning Only
Review of Elementary Algebra
Designed to assist students in reviewing material covered by DEVM 060. Individuals who have not previously taken an elementary algebra course are recommended to enroll in DEVM 060.

DEVM 062 3 Credits Fall, Spring
Alternative Approaches to Math: Elementary Algebra (3+0)
Elementary algebra. Algebraic equations, first-degree equations, polynomials, factoring, integral exponents and rational expressions using alternative teaching styles tailored to the specific cultural backgrounds of the students. (Prerequisites: DEVM 050 or appropriate placement test scores. Students must meet federal eligibility requirements.)

DEVM 065 1-3 Credits As Demand Warrants
Mathematics Lab (0+3-9)
An individual tutorial lab. Course content 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. Also available via Independent Learning. (Prerequisite: DEVM 060 or placement.)

DEVM 071 1 Credit Independent Learning Only
Review of Intermediate Algebra
Course reviews material covered by DEVM 070. Individuals who have not taken an intermediate algebra course on the high-school level are recommended to enroll in DEVM 070.

DEVM 072 3 Credits Fall
Alternative Approaches to Math: Intermediate Algebra (3+0)
Intermediate algebra. Exponents, radicals, graphing, systems of equations, quadratic equations, inequalities and complex numbers using alternative teaching styles tailored to specific cultural backgrounds of the students. (Prerequisites: DEVM 060 or appropriate placement test scores. Students must meet federal eligibility requirements.)

DEVM 081 1 Credit Independent Learning Only
Review of Basic Geometry
High school geometry without formal proofs. Topics include basic definitions, measurement, parallel lines, triangles, polygons, circles, area, solid figures and volume. (Prerequisite: DEVM 060.)

Diesel Technology

DSLT 150 7 Credits As Demand Warrants
Diesel Mechanics I (7+0)
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)
Principles of architectural, civil and industrial drafting.

DRT 101 4 Credits As Demand Warrants
Beginning Drafting I (4+0)
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)
Practice and skill development in geometric construction, sketching, orthographics and dimensioning, sections, auxiliaries and 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)
Reading and interpretation of two and three 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)
Covers the minimum required construction standards of the Uniform Building Code. Use of local zoning ordinances and the UBC as comprehensive building guides and their principle aspects applied to various building types and trades. Concentrates on zoning, the UBC and some fire codes. Mechanical and electrical codes are introduced only for student familiarity. (Prerequisite: Working knowledge of building systems is strongly recommended.)

DRT 125 2 Credits As Demand Warrants
Lettering I (2+0)
Lettering methods including varigraphic, Leroy, Kohi-Noor, Kad II, freehand and script. Commercial lettering skills.

DRT 130 4 Credits As Demand Warrants
Perspective Drafting I (4+0)
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)
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)
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)
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)
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
Drafting Co-Op Work Experience (2-3+0)
A non-paid practical work experience in a professional drafting environment. For the student who has mastered basic drafting techniques and terminology. 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)

The Early Childhood Development (ECHD) courses listed below are taught only in Fairbanks under auspices of the School of Career and Continuing Education. See the next section of this catalog for Early Childhood Education (ECDD) courses taught outside of Fairbanks under auspices of the Rural College.

ECHD 100 3 Credits As Demand Warrants
Introduction to Early Childhood (3+0)
The care and education of young children. Assessing needs and skills of young children. Defining skills needed by child care workers. Labs arranged.

ECHD 101 1 Credit Alternate Fall
Family Day Care Home Provider Training (1+0)
Operation of safe, successful day care home or family day care program. Overview of laws and regulations, business practices, parental concerns, health and safety, activities, space planning, snack and meal service, community support, and provider concerns. (Next offered: 1991-92.)

ECHD 105 3 Credits As Demand Warrants
Survey of Programs for Young Children (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 and 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)
Common illnesses and preventive health care, nutritional needs and safety aspects of rearing and teaching young children. For parents, care-givers and teachers of young children.

ECHD 121 1 Credit 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 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 help children acquire and use language as a means of communicating their thoughts and feelings. Includes non-verbal 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)
Theories of guidance, including body language effects, reinforcement, and logical consequences discussed for cultural relevance and practical application Emphasizes both direct and indirect guidance techniques..

ECHD 135 2 Credits Spring
Infant/Toddler Care (1+2)
Introduces activities to stimulate development and learning of infants and toddlers individually and in a group setting. Covers 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)
Ideas and techniques for a variety of story- telling methods. Maintaining interest and increasing reading readiness. Especially helpful for early childhood teachers.

ECHD 162 1Credit As Demand Warrants
Child Development Associate (1+0)
Introduces the caregiver to the Child Development Associate credential, a nationally recognized credential awarded to child caregivers who have successfully demonstrated competency in working with young children.

ECHD 163 1 Credit As Demand Warrants
Learning Centers for Young Children (1+0)
Participants explore how to set up and use learning centers in preschool classrooms; ideas exchanged for learning centers.

ECHD 211 1 Credit As Demand Warrants
Developing Positive Self-Concept (1+0)
Methods to help children 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 240 2 Credits As Demands Warrants
Financial Management of Early Childhood Development Programs (2+0)
Emphasis on the decision-making role for attaining quality environments with consideration of budgeting, fund raising, record keeping, proposal writing, purchasing and legal issues. For practicing directors and managers, head teachers and others interested in pursuing a career in child care management or early childhood program management.

ECHD 241 2 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.

ECHD 242 1 Credit As Demand Warrants
Observe/Record Behavior of Child (1+0)
Techniques for accurately observing children's behavior, including several methods of observation and techniques for graphing the results.

ECHD 245 3 Credits As Demand Warrants
Child Development (3+0)
(Same as PSY 245)
Study of development from prenatal through middle childhood including cognitive, emotional, social and physical aspects of the young child. Includes child observations. 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)
A guided student teaching experience in working with a group of 3-6 year old children. Student assumes increasing responsibility for planning and lead teaching. Prerequisites: 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)
A guided field experience in working with a group of young children in a school or center. Students who have demonstrated competency in ECHD 250 may participate in an infant toddler center, child care center, early childhood education program or public school classroom. Schedule times and dates to be arranged. (Prerequisites: ECHD 250 and instructor's permission.)

ECHD 255 3 Credits As Demand Warrants
Activities for Young Children (3+0)
Art, music, literature, and language experiences, science, math, food experiences, and excursions. For parents, caregivers and teachers of children ages 2-6. 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: ECHD/PSY 245 or permission of instructor.)

ECHD 261 3 Credits Alternate Fall
Mainstreaming Exceptional Children (3+0)
Developmental, social, educational and legal (PL94-457) issues related to the education of young handicapped children including the role of the teacher in identifying, assessing, and individualizing educational programs for the young handicapped child in the mainstreamed setting. (Prerequisites: ECHD/PSY 245 and ECHD 260 or instructor permission. Next offered: 1991-92.)

ECHD 265 2 Credits As Demand Warrants
Culture, Learning and the Young Child (2+0)
Effects of culture development and learning patterns of young children. Curriculum planning with emphasis on multi-cultural and multi- ethnic resources; special attention on Alaskan Native Cultures.

Early Childhood Education (Rural College)

The Early Childhood Education (ECDD) courses listed below are tuaght only outside of Fairbanks under auspices of the Rural College. See the preceding section of this catalog for Early Childhood Development (ECHD) courses taught in Fairbanks under auspices of the School of Career and Continuing Education.

Important Note: All Early Childhood Education courses must be accompanied by a lab experience in a facility for children ages 0-5.

ECDD 109 1 Credit As Demand Warrants
Orientation to Child Development (3+0)
Overview of training programs for early childhood workers with specific training for working in a Child Development Associate program. Instruction in how to perform as CDA field trainers and/or CDA candidates.

ECDD 111 1 Credit As Demand Warrants
A Safe Environment (1+0)
Teaches competencies which enable students to provide a safe environment for young children. Emphasis on 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 free of factors which may contribute to or cause illness. (CDA curriculum)

ECDD 113 1 Credit As Demand Warrants
Learning Environment (1+0)
Arranging the environment to be conducive to learning and appropriate to the developmental level and learning style of children. 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)
Essentials of planning a center which promotes the physical development of children. Includes scheduling, planning, activities, and selection of site, 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 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 help children acquire and use language as a means of communicating their thoughts and feelings. Includes non-verbal 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 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 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)
Methods for helping children develop a sense of awareness and self-esteem. Emphasis 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 212 1 Credit Fall, Spring
Developing Individual Strengths in Children (1+0)
Use of activities, techniques and planning that help each child to function to his/her maximum potential. Must be taken concurrently with supervised experience in a child development center, home-based or infant-learning setting.

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 centers. Emphasis on using this relationship to coordinate 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 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 help the teacher to understand the concept and purpose of mainstreaming special needs preschool children into the regular classroom. Emphasis on rights of special needs child to service and procedures for providing service under Public Law 94-142. (CDA curriculum)

ECDD 289 1 Credit As Demand Warrants
Final Assessment for Child Development Associate Credential (1+0)
Covers procedures for final assessment for the Child Development Associate (CDA) credential. 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 practical application of all previous CDA competency courses. The student will assume responsibility for seven or more children in an approved preschool program. (CDA curriculum)

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 100X 3 Credits Fall, Spring
(Same as PS 100X)
Political Economy (3+0) s
Survey of the evolution and operation of the American domestic political economy with consideration of market failures and government responses. Review of major issues in political economy such as inflation, poverty and budget deficits. Exploration of linkages between American and global systems.

ECON 101 3 Credits Fall, Spring
Introduction to Current Economic Problems (3+0) s
Focuses on such current problems as unemployment, inflation, pollution, and poverty utilizing a less theoretical approach than is customary in introductory economics courses. Primarily for the student who plans no further work in economics.

ECON 111 3 Credits As Demand Warrants
Economics of Rural Alaska (3+0)
Basic economic concepts as they relate to issues and problems of contemporary regional development in rural Alaska. 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
Economic problems in Alaska with analysis of historical trends and current patterns of economic growth; emphasis on present and future alternative economic policies, and their potential impacts. Also available via Independent Learning.

ECON 200 4 Credits Fall, Spring
Principles of Economics (4+0+1) s
Goals, incentives and outcomes of economic behavior with applications and illustrations from current issues: operation of markets for goods, services, and factors of production; the behavior of firms and industries in different types of competition; and income distribution. The functioning and current problems of the aggregate economy, determination and analysis of aspects of international exchange. (Prerequisite: Sophomore standing or permission of instructor.)

ECON 201 3 Credits Fall, Spring
Principles of Economics I: Microeconomics (3+0) s
Price and market theory, income distribution, contemporary problems of labor, agriculture, market structure, and pollution. Also available via Independent Learning.

ECON 202 3 Credits Fall, Spring
Principles of Economics II: Macroeconomics (3+0) s
Analysis and theory of national income, money and banking, and stabilization policy. Also available via Independent Learning.

ECON 227 3 Credits Fall, Spring
Intermediate Statistics for Economics and Business (3+0)
Extension of topics developed in STAT 200. Development of statistical techniques and their application to economic and business problems. Simple and multiple regression and correlation, analysis of variance, forecasting techniques, quality control, non-parametric methods, and decision theory. Materials fee: $20.00 (Prerequisite: STAT 200.)

ECON 235 3 Credits Fall
Introduction to Natural Resource Economics (3+0) s
Microeconomic principles and their application to natural resource issues. Topics include supply, demand, marginality, optimality, elementary production economics, economic rent, and comparative advantage. These principles 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 200 and MATH 262 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. Emphasis upon decision- making using analysis of research data. Materials fee: $10.00. (Prerequisites: ECON 200 and MATH 262 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 200 and MATH 262 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. 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. (Prerequisite: ECON 200 or 235.)

ECON 350 3 Credits Fall
Money and Banking (3+0) s
The liquid wealth system in the United States, including 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. (Prerequisite: ECON 200.)

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. (Prerequisite: ECON 200. Next offered: 1991-92.)

ECON 409W 3 Credits As Demand Warrants
Industrial Organization and Public Policy (3+0) s
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 200, 321. Next offered: 1991-92.)

ECON 420W 3 Credits Fall
Labor Markets and Public Policy (3+0) s
Application of labor market analysis and wage theory as they relate to public policy issues. Topics include determination of wages, taxation and employment, economic impact of unions, economics of discrimination, and issues relating to women's and minorities' changing roles in the labor market. (Prerequisite: ECON 200.)

ECON 436W 3 Credits As Demand Warrants
Energy Economics (3+0) s
Market forces and institutions affecting the allocation of energy resources. Special attention to intertemporal allocative decisions and the role that public policy plays in influencing the rate at which energy resources are used over time. (Prerequisite: ECON 200 or 235. Next offered: 1992-93.)

ECON 437W 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. (Prerequisite: ECON 200. Next offered: 1992-93.)

ECON 438W 3 Credits As Demand Warrants
The Economics of Fisheries Management (3+0)
Review of theoretical economic concepts as applied to the management of a commercial fishery. Major current management policy issues affecting United States' commercial fishing. Emphasis on the practical application of the economic theory and policy insights derived from the course to problems of management of Alaska's fisheries. (Prerequisite: ECON 200 or 235. Next offered: 1991-92.)

ECON 451W 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 200.)

ECON 463O 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. (Prerequisite: ECON 200.)

ECON 475 1-3 Credits Fall, 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 630 3 Credits Spring
Economic Issues of the Circumpolar North (3+0)
(Same as NORS 630)

ECON 635 3 Credits Fall
Resource Economics (3+0)

ECON 636 3 Credits Spring
Microeconomics II — Dynamic Resource Optimization (3+0)

ECON 670 0 Credit Spring
Seminar in Research Methodology (1+0)

Education

ED 101 1 Credit Fall, Spring
Orientation to Alaska Native Education (1+0)
A seminar in which Native Alaska educators present information and lead discussions on issues related to rural and urban Alaskan Native education. Topics include cultural differences in teaching and learning styles; curriculum development for multi-graded classrooms and small high schools; use of technology and community resources; and decision- making and local control. (Prerequisite: Permission of instructors.)

ED 106 3 Credits As Demand Warrants
Reading Activities in the Classroom (3+0)
Methods, materials and teaching of reading. Techniques for working with small groups and for integrating a language experience approach using personal language backgrounds with basal reading programs. Use of teacher's guides. Demonstration lessons.

ED 131 1-3 Credits As Demand Warrants
Implementation of an Adult Education Program (1+0, 2+0 or 3+0)
Procedure for planning and establishing a village- based adult education program. 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 3 Credits 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, scheduling, production of bilingual materials, and team teaching. (Recommended: Literacy in both languages of instruction.)

ED 200 2-6 Credits As Demand Warrants
Peer Tutoring (1+3 to 6)
Peer tutoring offers an opportunity to explore issues and practice tutoring techniques. For students interested in teaching or those who wish to share their expertise in a content area. Students may take the Institute section (3 weeks) and/or the Learning Activities Center section (12 weeks). Lab time arranged for variable credit; course may be repeated for up to six credits.

ED 201 3 Credits Fall, 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)
(Same as ART 208)
Concepts in art education for persons with limited art background working with young children. Combines a philosophy of art education, art history, and 'hands-on' experiences to enable the teacher to effectively integrate visual arts into the curriculum as enjoyment and enrichment.

ED 210 3 Credits· As Demand Warrants
Second Language Acquisition (3+0)
An intensive study of how people acquire second languages, i.e., ones in addition to the ones they learn as young children in the home. Topics include psychological, social and cultural aspects of second language acquisition, theory of acquisition, applied linguistic and sociolo-linguistic research, and insights of teachers and students of second languages. Examination of acquisition of languages by people in the students' own communities.

ED 211 3 Credits As Demand Warrants
Methods and Materials for Teaching a Second Language (3+0)
Intensive work in a broad repertoire of second language teaching methods. Includes designing, teaching, and assessing actual lessons. (Prerequisite: 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)
Development of scope and sequence for unit plans and yearly/multyear curricula for teaching a second language. (Prerequisite: 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)
Interrelated principles of human growth, development, adjustment and learning. For students preparing for a career in teaching but also open to parents, counselors, community workers and others.

ED 214 3 Credits As Demand Warrants
Natural Approaches to Language Instruction (3+0)
Students explore modern approaches, methods, techniques, and activities which have been successful in teaching second languages.

ED 215 3 Credits As Demand Warrants
Methods of Teaching a Second Language (3+0)
Provides a basic knowledge of second language acquisition theory. Students taught 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 criteria for evaluation. Emphasizes methods of encouraging children's appreciation of a variety of selections. Students may study materials for a specific age group within 1-12 years.

ED 220 3 Credits As Demand Warrants
Culture and Learning (3+0)
The role of culture in human development. Study of the learning process in various cultural contexts. Attention 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)
Overview of bilingual instruction. Students make and adapt materials for the classroom. Attention 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. (Prerequisite: 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)
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 teaching styles. Roles of the second language teacher and their appropriateness covered. Presents techniques and activities consistent with specific language teaching methods and adaptation of these methods to the needs of western Alaska classrooms. (Prerequisite: Classroom experience.)

ED 275 3 Credits Fall, Spring
Introduction to Microcomputers for Teachers (3+0)
Computer technology and its present and potential impact on education. Topics include basic microcomputer terminology and operation, classroom applications of computer technology, and choosing and using hardware and software. (Prerequisite: 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, Spring
Literature for Children (3+0)
Evaluation criteria and application to children's 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, Spring
Modes of Creative Expression in Education (3+0)
Use of art, music, dance, drama, photography and creative writing in education to stimulate creative expression. Methods of incorporating these modes of expression into teaching practices. (Prerequisite: ED 330.)

ED 311 3 Credits Spring
Introduction to Instructional Technologies (2+3)
Principles, procedures, materials and apparatus associated with use of instructional technologies. Instructional (AV) equipment: video recorders, teleconferencing equipment, motion and still picture projectors, audio recorders, and other programmable equipment reviewed. Systematic selection and utilization techniques. (Prerequisite: ED 201 or concurrent enrollment in ED 201.)

ED 330 3 Credits Fall, Spring
Diagnosis and Evaluation of Learning (3+0)
Nature of classroom teaching-learning process, emphasizing teaching decisions. Strengths and weaknesses of various forms of diagnosis and evaluation of learning, with emphasis on problems in cross-cultural settings. Informal, formal, process, and product assessment. (Prerequisite: PSY 240; concurrent enrollment in PSY 240 permissable 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 and parent-child relationships in different time periods. Examines psychogenic personality changes caused by parent-child interaction through successive generations. (Prerequisite: Junior standing.)

ED 338 3 Credits As Demand Warrants
Education and Economic Development (3+0)
(Same as RD 338)
Examines theory and evidence linking varied forms of education to economic growth and development. A comparative approach explores 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)
The influence of social, political, and economic forces upon schools. Examines how school organization affects teaching practices, 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 analyzed with attention to issues in Alaska. (Prerequisite: Junior standing in education.)

ED 350 3 Credits Fall, Spring
Communication in Cross-Cultural Classrooms (3+0)
Interdisciplinary examination of communication and language in cross-cultural educational situations, including language, literacy, and inter-ethnic communication related to classrooms in Alaska. Also available via Independent Learning. (Prerequisite: LING 101 or ANL 215 or ANL 216 or permission of instructor.)

ED 375 3 Credits Fall, Spring
The Exceptional Learner (3+0)
Understanding, identifying and serving the exceptional learner in the regular classroom in rural and urban settings. Includes the unique needs of exceptional students in rural settings from bilingual/multicultural backgrounds. Also available via Independent Learning. (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 in a variety of cultural contexts. Social, cultural and psychological factors inherent in the educational process and how they are affected by a multicultural setting. Attention given to curriculum improvement and teaching strategies appropriate for the multicultural classroom and school. (Prerequisite: ED 330 and junior standing.)

ED 402 3 Credits Fall, Spring
Methods of Teaching in the Secondary School (2+3)
Principles and methods of teaching 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. (Prerequisites: ED 201; admission to teacher education program. This course should be taken the semester prior to ED 453.)

ED 407 3 Credits Fall, Spring
Reading Strategies for Secondary Teachers (3+0)
Techniques and materials to help secondary students acquire skills for greater comprehension of subject matter. Should be taken concurrently with ED 402. (Prerequisites: ED 330 and junior standing.)

ED 410 3 Credits Fall, Spring
Foundations of Literacy Development (3+0)
Language, reading, and writing development examined in children of varying ages and within various social contexts, with emphasis on impact of out-of-school styles on school literacy instruction. (Prerequisites: Fairbanks program: All required education courses through the 300 level; concurrent enrollment in ED 411, 412, and 413; and permission of instructor. X-CED program: PSY 240, ED 304, 310, and 330.)

ED 411 3 Credits Fall, Spring
Strategies for Reading and Writing Instruction in Multi-Cultural Classrooms (3+0)
Methodology, instructional materials, and language arts content relevant to the instruction of developmental language, reading and writing in diverse K-8 classrooms. Includes practicum placement in elementary school. (Prerequisites: Fairbanks program: All required education courses through the 300 level; concurrent enrollment in ED 410, 412, and 413; and permission of instructor. X-CED program: PSY 240, ED 304, 310, and 330.)

ED 412 3 Credits Fall, Spring
Language Arts and Social Studies: Methods and Curriculum Development (3+0)
Study of concepts, content, methods and materials which characterize the teaching of language arts and social studies; the development of written plans and units; and practicum experience in elementary school. (Prerequisites: Fairbanks program: All required education courses through the 300 level; concurrent enrollment in ED 410, 411, and 413; and permission of instructor. X-CED program: ED 410 and 411.)

ED 413 3 Credits Fall, Spring
Mathematics and Science: Methods and Curriculum Development (3+0)
Study of concepts, content, methods and materials which characterize the teaching of mathematics and science; the development of written plans and units; and practicum placement in elementary school. (Prerequisites: Fairbanks program: All required education courses through the 300 level; concurrent enrollment in ED 410, 411, and 412; and permission of instructor. X-CED program: ED 410 and 411.)

ED 420 3 Credits Fall
Alaska Native Education (3+0)s
(Same as ANS 420)
School systems historically serving Native people, current efforts toward local control, and the cross cultural nature of this education. (Prerequisite: ANTH 242 or HIST 100; or permission of instructor.)

ED 422 3 Credits As Demand Warrants
Building a Practical Philosophy of Education
A study of philosophy as a distinct discipline with its own terminology, concepts, and processes and how it functions in the field of education. Emphasis to an application of philosophy of education to cross-cultural situations in Alaskan classrooms. Available only via Indpendent Learning. (Prerequisite: Junior standing or permission of the instructor.)

ED 424 3 Credits Fall
Small High School Programs (2+3)
Examines traditional and alternative approaches to the design of small high school programs, with emphasis on 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)
Methods and techniques for developing and implementing a community-oriented curriculum with practical experience in identifying and using community educational resources. (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 effective use of microcomputers in the classroom; understanding 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, Spring
Multicultural Teaching Techniques (2+3)
Effective teaching strategies for cross-cultural and multicultural classrooms with attention to 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). Weekly participation 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 issues related to cultural transmission in a multi-cultural environment. Emphasis on dynamics of cultural change. (Prerequisite: ED 330 and junior standing.)

ED 451 1-9 Credits Fall, Spring
Practicum in Education
Practical application of general ideas and techniques addressed in methods courses in which the student is currently enrolled or previously completed. (Prerequisites: ED 201, 330, 402 or equivalent; concurrent enrollment permitted with ED 402; permission of instructor.)

ED 452 12 Credits Fall, Spring
Elementary Student Teaching (1+33)
Supervised teaching in elementary schools approved by the department of education. Students should expect to be involved in the school setting for the entire school day for the entire university semester. The department may limit registration, determine assignments, and cancel the registration of students doing unsatisfactory work. (Prerequisites: See requirements for admission to student teaching.)

ED 453 12 Credits Fall, Spring
Secondary Student Teaching (1+33)
Supervised teaching in secondary schools approved by the department of education. Students should expect to be involved in the school setting for the entire school day for the entire university semester. The department may limit registration, determine assignments, and cancel the registration of students doing unsatisfactory work. (Prerequisites: See requirements for admission to student teaching.)

ED 454 12 Credits Fall, 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. Students should expect to be involved in the school setting for the entire school day for the entire university semester. The department may limit registration, determine assignments, and cancel the registration of students doing unsatisfactory work. (Prerequisites: See requirements for admission to student teaching.)

ED 456 3 Credits Summer
Orientation to Teaching in Rural Alaska (2+3)
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 NRM 462)
Utilization of the environment inside and outside the formal classroom in all subject areas. Curriculum materials (K-12), interpretive and audiovisual aids, problem solving, and applications to situations from the public schools to summer campus, short courses, and workshops for individuals of any age. (Prerequisite: Junior standing or permission of instructor.)

ED 470 3 Credits As Demand Warrants
Human Resource Development (3+0)
Strategies and approaches which emphasize mobilization and utilization of human resources within 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 using elementary level Alaska Sea Week Curriculum Guides, plus secondary level materials. 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 MSL 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 its use in the curriculum. (Prerequisite: Upper division undergraduate or certified teacher status. Next offered: 1992-93.)

ED 490 3 Credits Fall, Spring
Curriculum Development in Cultural Perspective (3+0)
Issues in development of curriculum programs and materials in a cross-cultural environment. Emphasis on process, context, and content as well as curriculum change and evaluation strategies. Students work on a curriculum development project applicable to their individual circumstances. (Prerequisite: ED 330.)

ED 580 1 Credit As Demand Warrants
Wildlife and Wetlands Curricula (1+0)
Wildlife education curricula, focusing on strategies for teaching biological and ecological concepts related to the goose populations which nest in the Yukon-Kuskokwim delta; strategies for teaching students the value of wetlands as wildlife habitat, migration, how wildlife becomes endangered and extinct and ways to develop a sense of personal responsibility and decision-making skills about wildlife.

ED 582 4 Credits Fall
Teaching as Reflective Inquiry (3+3)
Reflective inquiry into the social organization and cultures of large and small schools. Motivations of teachers and stages of professional development. Context of teaching: legal framework, school finance, history of American education and education in Alaska. (Prerequisites: Baccalaureate degree; admission to Teachers for Alaska Program.)

ED 583 8 Credits Fall
Teaching as Decision-Making and Invention (4+0+8)
Considers educational purposes of the curriculum. 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 in multicultural contexts. (Prerequisites: Baccalaureate degree; admission to Teachers for Alaska 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. Students observe, assist teachers, and prepare lessons in the public schools. Should be taken concurrently with ED 583. (Prerequisites: Baccalaureate degree; admission to Teachers for Alaska Program.)

ED 585 3 Credits Spring
Reflective Inquiry into Multicultural Classrooms and Communities (1+6)
A field-delivered course which accompanies student teaching. A structured opportunity for student teachers to reflect on the cultures of the communities in which they are teaching and the social organization of their classrooms. Students do research on the economy and political organization of the community in which they are teaching and the responses of their students to alternative motivational and pedagogical approaches. (Prerequisites: Baccalaureate degree; admission to Teachers for Alaska Program.)

ED 586 3 Credits Spring
Designing Learning Environments (2+3)
This culminating course of the TFA program involves directed fieldwork projects and brings together the student cohort group for a seminar at the conclusion of their student teaching experience. The full-week seminar features analysis and discussion of their classroom and community experience during student teaching with additional study of issues which students found troubling and problematic. Students develop 'cases' of their own student teaching experience which they discuss with the seminar group. (Prerequisites: Baccalaureate degree; admission to Teachers for Alaska Program.)

ED 601 3 Credits Fall
Introduction of Applied Social Science Research (3+0)

ED 603 3 Credits Spring
Field Study Research Methods (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 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 660 3 Credits Fall
Educational Administration in Cultural Perspective (3+0)

ED 661 3 Credits Fall
Organizational Theory for School Administration (3+0)

ED 662 3 Credits Spring
Educational Leadership in the School and Community (3+0)

ED 663 3 Credits Fall
School Law (3+0)

ED 674 3 Credits Spring
Program Planning and Management (3+0)

ED 675 3 Credits Spring and Summer
Preinternship Management Practicum (3+0)

ED 676 3 Credits Fall, Spring
Internship: Principal's Endorsement (0+9)

ED 677 3 Credits As Demand Warrants
Public School Finance (3+0)

ED 679 3-6 Credits Fall, Spring
Internship: Superintendent's Endorsement (0+9)

ED 680 3 Credits As Demand Warrants
Comparative Education (3+0)

ED 689 3 Credits Fall
Proseminar in Applied Research (1+6)

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

A $25.00 per semester student computing facility user fee is assessed for School of Engineering courses. This fee is in addition to any lab/material fees.

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, Spring
Electrical Engineering Fundamentals I (3+3)
Analysis of alternating-current circuits using complex notation and phasor diagrams, resonance, transformers, Laplace 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, 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, 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 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 circuit design 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, 8 and 16 bit microprocessor organization, operation and programming, 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. (Prerequisites: 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, power flow, and computer-aided power flow analysis. Laboratory fee: $25.00. (Prerequisite: EE 303.)

EE 406 4 Credits Fall
Electrical Power Engineering (3+3)
Symmetrical and unsymmetrical faults, protective relaying, economic operation of power systems, dynamic power system stability, and computer aided fault and transient stability analysis. Laboratory fee: $25.00. (Prerequisite: 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, 354, 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, 333; 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 4 Credits Fall
Digital Signal Processing (3+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. (Prerequisite: EE 354 or equivalent.)

EE 454 4 Credits Spring
Advanced Digital Systems Application and Design (3+3)
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)
Theory design and implementation of communication systems. 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. Introduction to probability, statistics, and information theory, systems design and laboratory experience in analog and digital communication. (Prerequisites: EE 354, 334.)

EE 464 3 Credits Spring
Communication Networks (3+0)
Design of voice and data 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. 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.)

**Note: A student registering for both EE 442 and 443 will be assessed a fee of $150.00 at the beginning of the fall semester for EE 442. The $150.00 fee does not apply to a student registering for only EE 442; however, a student who does not take EE 442 at UAF, but who enrolls in EE 443 will be assessed the $150.00 fee at the time of registration. In all cases, the $150.00 fee is in addition to the standard $25.00 lab fees.

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 643 4 Credits Fall
VLSI in Computer System Design (3+3)

EE 652 3 Credits Alternate Spring
Adaptive Systems and Neural Networks (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 668 3 Credits As Demand Warrants
Microwave Systems Engineering (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 (1-3+0)
Overview of amateur radio. Code and radio theory provided for the Novice and General Amateur License Examination. Community emergency communications, net operations, repeaters, and public classroom applications for those alrady licensed.

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)
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 rules governing minimum requirements for installation of electrical services, feeders and branch circuits and requirements for construction and installation of electrical equipment.

Emergency Medical Technology

EMTT 103 3 Credits As Demand Warrants
EMT: Emergency Trauma Training First Responder (3+0)
Training in emergency medical care. Proficiency in basic emergency medical care to victims of emergencies and in minimizing patient suffering and prevention of further injury. Materials fee: $10.00-$15.00.

EMTT 110 1 Credit As Demand Warrants
EMT: Cardiopulmonary Resuscitation (1+0)
Emergency treatment of breathing and/or heart function interference. Based on the Basic Life Support course offered by the American Heart Association.

EMTT 119 4 Credits As Demand Warrants
EMT: Emergency Medical Technician I (4+0)
Techniques to administer life-saving first aid and operate an ambulance. Upon 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)
Basic patient assessment, advanced shock management, trauma management, CPR, extrication and immobilization techniques. Includes 120 hours of didactic and practical skills training similar to EMTT 119, but emphasizing ambulance techniques.

EMTT 121 2 Credits As Demand Warrants
EMT: Emergency Medical Technician II (2+0)
Improvement of EMT skills in trauma intervention for the seriously injured patient through advanced techniques in fluid therapy. Use of MAST pants, utilization of specific drug therapy and advanced airway care covered. Materials fee: $85.00.

EMTT 123 1 Credit As Demand Warrants
Emergency Medical Technician III (1+0)
Introduction to basic cardiac anatomy and physiology, cardiac electrophysiology, recognition and treatment of basic lethal arrythmias, use of defibrillator monitor, use of morphine, lidocaine, and epinephrine 1:1000. Recognition and treatment of extremity pain due to isolated trauma. (Prerequisite: Successful completion of EMTT 121 or EMT II standing.)

EMTT 124 1 Credit As Demand Warrants
EMT: Emergency Medical Technician - Refresher (1+0)
Review of basic skills and emergency medical procedures at the Basic EMT level. Covers emergency medical care procedural changes, newly developed equipment and its use, changes in State licensure or other medico-legal requirements.

EMTT 247 A, B 2 Credits As Demand Warrants
Arctic Survival (1+2)
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

A $25.00 per semester student computing facility user fee is assessed for School of Engineering courses. This fee is in addition to any lab/material fees.

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. Laboratory fee: $20.00.

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. Laboratory fee: $20.00. (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.)

*Undergraduate engineering students who are taking graduate ESM courses as technical electives should have completed or be concurrently enrolled in ESM 450.

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, Spring
Computer Programming for Engineering Managers (3+0)

ESM 684 3 Credits Spring and Fall
Engineering Management Project (3+0)

Engineering Science

A $25.00 per semester student computing facility user fee is assessed for School of Engineering courses. This fee is in addition to any lab/material fees.

ES 101 2 Credits Fall, Spring
Descriptive Geometry for Engineers (1.5+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, Spring
Computer Techniques (2+3)
Basic computer programming, in FORTRAN and BASIC, with applications from all fields of engineering. Laboratory fee: $10.00. (Prerequisites: MATH 107 and 108 or enrollment in MATH 200.)

ES 208 4 Credits Spring
Mechanics (3+3)
Engineering-oriented coverage of statics and dynamics. Vector methods used where appropriate. (Prerequisites: MATH 201 and PHYS 211.)

ES 209 3 Credits Fall, Spring
Statics (3+0)
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, Spring
Dynamics (3+0)
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 typical engineering design problems. Selected topics from all fields of engineering. (Prerequisites: MATH 302, ES 210.)

ES 307 3 Credits Fall
Elements of Electrical Engineering (2+3)
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 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, 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 209 and MATH 201.)

ES 341 4 Credits Fall, 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 210.)

ES 346 3 Credits Fall, Spring
Basic Thermodynamics (3+0)
Thermodynamic 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 111X and ENGL 211X or 213X or equivalent.

DEVELOPMENTAL 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, Spring
English Skills Laboratory (0+3-9)
Individualized instruction in language skills. Open entry/open exit, one credit lab modules in spelling/vocabulary, writing, and grammar usage. Enrollment in one or more based on diagnosed need or desire; may be repeated. Counts as elective credit only; does not fulfill degree requirements in written communications or humanities.

DEVE 070 3 Credits As Demand Warrants
Preparatory College English (3+0)
Instruction in writing to improve students' fluency and accuracy and communication skills. Preparation for ENGL 111. Placement by examination or student decision. Materials fee: $5.00.

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.

Required composition courses may also be taken through University of Alaska Fairbanks correspondence study.

ENGLISH

ENGL 104 3 Credits As Demand Warrants
Institute on Language & Thought (3+0)
Development of critical thinking, writing, and reading skills using the Bard College model. The intensive Institute establishes and nurtures learning communities which support bold thinking, risk-taking, collaboration, and independence. Offered only at the Kuskokwim Campus.

ENGL 111X 3 Credits Fall, Spring
Methods of Written Communication (3+0)
Expository prose, including topic development. Practice in developing, organizing, writing, revising, and editing compositions. Materials fee: $8.00. Also available via Independent Learning. (Prerequisite: Placement examination or DEVE 070.)

ENGL 190HX 3 Credits Fall, Spring
Honors English Composition (3+0)
Extensive readings in a variety of disciplines. Frequent writing assignments addressing a wide range of topics for specific purposes and audiences. Emphasis upon writing as a tool for learning across the curriculum. (Prerequisite: Admission to the Honors Program or recommendations of instructor.)

ENGL 200X 3 Credits Fall, Spring
World Literature (3+0) h
(Same as FL 200X)
Introduction to the reading and appreciation of a wide variety of literary texts from different cultures. Includes exposure to a variety of approaches to myth, poetry, storytelling and drama. Students will gain an understanding of cultural differences and universals in text from American, American minority, Western European and non-Western sources. Specific content to be announced at time of registration. Course may be repeated for credit when content varies. (Prerequisite: ENGL 111X or permission of instructor.)

ENGL 211X 3 Credits Fall, Spring
Intermediate Exposition, with Modes of Literature (3+0)
Instruction in writing through close analysis of literature. Research paper required. Materials fee: $8.00. Also available via Independent Learning. (Prerequisites: Sophomore standing and completion of ENGL 111X or its equivalent.)

ENGL 212 3 Credits As Demand Warrants
Business, Grant, and Report Writing (3+0)
Forms and techniques of business, grant, and report writing. (Special emphasis may be placed on one or another of these topics in a given semester.) Does not fulfill the second half of the baccalaureate requirements in written communication. (Prerequisite: ENGL 111X.)

ENGL 213X 3 Credits Fall, Spring
Intermediate Exposition (3+0)
Instruction in writing through close analysis of expository prose from the social and natural sciences. Research paper required. Materials fee: $8.00. (Prerequisites: Sophomore standing and completion of ENGL 111X or its equivalent.)

NOTE: Neither ENGL 211X nor ENGL 213X can be used as a prerequisite for any other course or for any particular course of study. However, 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 Spring
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 111X or permission of instructor.)

ENGL 216 3 Credits Fall, 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 111X or permission of instructor.)

ENGL 217 3 Credits Spring
Introduction to the Study of Film (2+2) h
(Same as JB 217)
A broad historical survey of cinematic art with emphasis on its humanistic and artistic aspects. (Prerequisite: ENGL 111X.)

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 theme is announced at registration. Course maybe repeated for credit when content varies. (Prerequisite: ENGL 111X 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. (Prerequisites: Open only to students for whom English is a foreign language. Permission of instructor required.)

ENGL 271 3 Credits Fall, Spring
Introduction to Creative Writing - Fiction (3+0) h
Forms and techniques of fiction for beginning students; discussion of students' work in class and in individual conferences. Materials fee: $10.00. (Prerequisite: ENGL 111X or permission of instructor.)

ENGL 272 3 Credits Fall
Introduction to Creative Writing - Poetry (3+0) h
Forms and techniques of poetry for beginning students; discussion of students' work in class and in individual conferences. Materials fee: $5.00. (Prerequisite: ENGL 111X or permission of instructor.)

ENGL 290H 2 Credits Fall
Summer Reading Program (Honors) (2+0) h
Selected readings in a variety of disciplines. Group discussions and written responses to the readings follow in the fall. Students keep a summer journal. May be repeated for credit. (Prerequisite: ENGL 111X 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 western literary tradition has risen. (Prerequisite: ENGL 111X or permission of instructor.)

ENGL 306 3 Credits Spring
Survey of American Literature (3+0) h
American thought as reflected in its major writers, including works representative of American Calvinism, Rationalism, Transcendentalism, Romanticism, Realism, Naturalism, and Modernism. (Prerequisite: ENGL 111X 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 Elizabethan period (Shakespeare), Restoration, and Neoclassic Period of the 18th Century. (Prerequisite: ENGL 111X 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 111X or permission of instructor.)

ENGL 310 3 Credits Spring
Literary Criticism (3+0) h
History and principles of literary criticism, from earliest days to present. (Prerequisite: ENGL 111X or permission of instructor.)

ENGL 313W 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. Course does not fulfill the second half of the general degree requirement in written communication. (Prerequisites: Junior standing, ENGL 211X or 213 or permission of instructor.)

ENGL 314OW 3 Credits Fall, Spring
Technical Writing (2+0+1) h
Writing business letters (letters of inquiry, complaint, evaluation, and job application with resume), preparing tables, graphs, process descriptions, technical instructions, abstracts, grant proposals, and technical reports (progress, laboratory, survey, incident, inspection, feasibility, and research). Course does not fulfill the second half of the requirement in written communication. Materials fee: $3.00. (Prerequisites: Junior standing and ENGL 211X or 213X or permission of instructor).

ENGL 318 3 Credits Fall, Spring
Modern English Grammar (3+0) h
Structure of current English as seen through traditional and contemporary grammatical theories. (Prerequisite: English 111X or permission of instructor.)

ENGL 340 3 Credits Fall
Contemporary Native American Literature (3+0)h
(Same as ANS 340)
Contemporary Native American writing in English, including novels, short stories, poetry, and plays. Examples of Native American film when related to a writing. Works discussed in relation to cultural contexts and interpretations. (Prerequisite: ENGL 111X 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)
Traditional and historical tales by Aleut, Eskimo, Athabaskan, Eyak, Tlingit, Haida, and Tsimshian storytellers. Bibliography, Alaska Native genres and viewpoints, and structural and thematic features of tales. (Prerequisite: ENGL 111X or permission of instructor.)

ENGL 350 3 Credits Alternate Spring
Literature of Alaska and the Yukon Territory (3+0) h
Representative fiction, verse, and non-fiction dealing with Alaska and the Yukon Territory. Also available via Independent Learning. (Prerequisite: ENGL 111X or permission of instructor. Next offered: 1992-93.)

ENGL 371OW 3 Credits Fall, Spring
Intermediate Creative Writing (3+0) h
Practice and guidance in writing fiction, poetry, drama, and essays. Students' work read and discussed in class and in conference with the instructor. Close study of the techniques of established writers. Materials fee: $10.00. (Prerequisite: ENGL 271 or ENGL 272 or permission of instructor.)

ENGL 403OW 3 Credits Every Third Spring
American Renaissance (3+0) h
American literature of the mid-nineteenth century: Poe through Whitman. (Prerequisite: ENGL 111X or permission of instructor. ENGL 306 recommended but not required. Next offered: 1992-93.)

ENGL 404 3 Credits Every Third Spring
American Realism (3+0) h
American literature from the Civil War to World War I: Twain through James. (Prerequisite: ENGL 111X or permission of instructor. ENGL 307 desirable but not required. ENGL 306 desirable but not required. Next offered: 1993-94.)

ENGL 405 3 Credits Every Third Fall
British Writers of the 19th Century: Romantic Period (3+0) h
English literary romanticism including authors such as Byron, Keats, Shelley, Coleridge, Wordsworth, Austen, the Bronte sisters, and Scott. (Prerequisite: ENGL 111X or permission of instructor. ENGL 308 desirable but not required. Next offered: 1993-94.)

ENGL 406 3 Credits Every Third Fall
British Writers of the 19th Century: Victorian Period (3+0) h
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 111X or permission of instructor. ENGL 309 desirable but not required. Next offered: 1993-94.)

ENGL 407 3 Credits Every Third Spring
British Writers of the Restoration and 18th Century: Neo-Classical Period (3+0) h
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 111X and junior standing or permission of instructor. ENGL 308 recommended. Next offered: 1991-92.)

ENGL 408 3 Credits Every Third Spring
American Origins. (3+0) h
Writers who contributed to the development of a national literary identity: Bradstreet through Cooper. (Prerequisites: ENGL 111X and junior standing or permission of instructor. ENGL 306 recommended but not required. Next offered: 1993-94.)

ENGL 414W 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. (Prerequisites: ENGL 111X and 211X or 213X or their equivalent.)

ENGL 421 3 Credits Alternate Spring
Chaucer and His Age (3+0) h
Major poetry of Chaucer and his contemporaries, with emphasis on *The Canterbury Tales*, and survey of criticism. (Prerequisite: ENGL 111X or permission of instructor. ENGL 308 desirable but not required. Next offered: 1992-93.)

ENGL 422W 3 Credits Fall
Shakespeare: History Plays and Tragedies (3+0) h
Major chronicle plays and tragedies, including significant criticism. (Prerequisite: ENGL 111X or permission of instructor. ENGL 308 desirable but not required.)

ENGL 425W 3 Credits Spring
Shakespeare: Comedies and Non-Dramatic Poetry (3+0) h
Major comedies and non-dramatic poems, including significant criticism. (Prerequisite: ENGL 111X 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 111X or permission of instructor. ENGL 308 desirable but not required. Next offered: 1993-94.)

ENGL 444W 3 Credits Every Third Spring
Fiction in Translation (3+0) h
Major fiction in English translation. (Prerequisite: ENGL 111X or permission of instructor. Next offered: 1993-94.)

ENGL 445 3 Credits Alternate Fall
20th-Century Drama: From Chekhov to Ionesco (3+0) h
The major dramatists and their achievements. (Prerequisite: ENGL 111X or permission of instructor. Next offered: 1992-93.)

ENGL 446 3 Credits Alternate Spring
Major Modern and Contemporary Poetry (3+0) h
Yeats to the present. (Prerequisite: ENGL 111X or permission of instructor. Next offered: 1991-92.)

ENGL 447 3 Credits Alternate Fall
20th-Century British Prose (3+0) h
Study of fiction and nonfiction prose, modern and contemporary. (Prerequisite: ENGL 111X or permission of instructor. Next offered: 1991-92.)

ENGL 448 3 Credits Alternate Spring
20th-Century American Prose (3+0) h
Study of fiction and nonfiction prose, modern and contemporary. (Prerequisite: ENGL 111X or permission of instructor. Next offered: 1992-93.)

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 111X or permission of instructor. Next offered: 1993-94.)

ENGL 462 3 Credits Alternate Spring
Applied English Linguistics (3+0) h
Topic(s) for each offering of the course are announced. Examples are teaching English as a second language, dialects and education, dictionaries, stylistics, and composition. (Prerequisite: ENGL 111X or permission of instructor. Next offered: 1991-92.)

ENGL 471W 3 Credits Fall, Spring
Undergraduate Writers' Workshop (3+0) h
Discussion of craft and techniques and student work. For advanced students who prepare manuscript as a final project. May be repeated one time for credit. Materials fee: $10.00. (Prerequisite: 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 111X or permission of instructor. ENGL 318 or a linguistics course is desirable, but not required. Next offered: 1991-92.)

ENGL 485 3 Credits Alternate 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. Variety of teaching methods demonstrated, practiced and discussed. (Prerequisites: Completion of university composition requirement with grade of B or higher, or permission of instructor. Next offered: 1991-92.)

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)

ENGL 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 620 3 Credits alternate Fall
Images of the North (3+0)
(Same as NORS 620)

ENGL 651 3 Credits Alternate Spring
Internship in Publishing (3+1)

ENGL 671 Credits Arr. Fall, Spring
Writers' Workshop

ENGL 673 3 Credits Fall
Professional Writing Workshop (3+0)

ENGL 681 3 Credits Every Third Semester
Forms of Poetry (3+0)

ENGL 682 3 Credits Every Third Semester
Forms of Fiction (3+0)

ENGL 683 3 Credits As Demand Warrants
Forms of Drama (3+0)

ENGL 684 3 Credits Every Third Semester
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, Spring
Graduate Seminar

English as a Second Language

ESLG 051 1-3 Credits As Demand Warrants
Speaking English as a Second Language
This class provides opportunity to engage in English conversation. For students who do not speak English as their first language, but who can understand and follow simple instructions in English. 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
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. For students whose first language is not English, this class provides an opportunity to develop the skills involved in reading simple passages in English. May be repeated up to nine credits.

ESLG 071 1-3 Credits As Demand Warrants
Writing English as a Second Language
This class provides an opportunity to develop skills at writing simple English compositions. For students whose first language is not English. 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

A $25.00 per semester student computing facility user fee is assessed for School of Engineering courses. This fee is in addition to any lab/material fees.

EQS 201 3 Credits Spring
Environmental Management (3+0) s
Social processes which affect 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 used. Course integrated with and complements NRM 101.

EQE 641 3 Credits Every Fifth Semester
Environmental Quality Science Measurements (2+3)

EQE 642 3 Credits Every Fifth Semester
Modeling for Environmental Management (3+0)

EQE 643 3 Credits Fall
Air Pollution Management (4+0)

EQE 644 3 Credits Every Fifth Semester
Environmental Quality Evaluation (3+0)

EQE 645 3 Credits Every Fifth 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 NRM 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)
(Same as GE 649)

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)
An entry-level course to learn the Yup'ik language. The TPR (Total Physical Response) method, learning through commands and actions, is used. Focus is on teaching comprehension in everyday situations, with speech being delayed until the student is ready. The study of grammar, reading and writing are not covered.

ESK 104 3 Credits As Demand Warrants
Yup'ik Made Easy II (3+0)
A continuation of ESK 103 using the TPR (Total Physical Response) method. Reading and writing are covered indirectly; the focus is on teaching comprehension of the language in everyday situations.

ESK 105 1-3 Credits As Demand Warrants
ESK 106 1-3 Credits As Demand Warrants
Conversational Central Yup'ik (1+3)
Introductory courses in 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
Yup'ik Literacy (3+8)
Literacy training for speakers of Yupik languages (Central Yupik, St. Lawrence Island Yup'ik, and Alutiiq). Instruction in reading and writing skills.

ESK 109 3 Credits As Demand Warrants
Yup'ik Orthography (3+0)
An entry level-class for persons fluent in Central Yup'ik. Covers 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 are 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)
Introductory course 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. Instruction in learning to read and write the language.

ESK 130 3 Credits As Demand Warrants
Beginning Yup'ik Grammar (3+0) h
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 given 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 Yup'ik (1+3)
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 Yup'ik Orthography (1+3)
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 instructor permission.)

ESK 201 3 Credits Fall
ESK 202 3 Credits Spring
Intermediate Yup'ik (3+0) h
Continuation of ESK 101 and 102. Increasing emphasis on speaking, reading, and writing. (Prerequisite: ESK 102 or instructor permission.)

ESK 203 3 Credits As Demand Warrants
Yup'ik Made Easy III (3+0) h
A continuation of ESK 103 and 104 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 205 3 Credits As Demand Warrants
Regaining Fluency in Yup'ik (3+0) h
Yup'ik speaking skills and fluency for those with some background in the language. (Prerequisite: Permission of instructor. Each potential student must be evaluated for language capabilities.)

ESK 208 3 Credits As Demand Warrants
Yup'ik Composition (3+0) h
An examination of the development of written Yup'ik and exploration of writing for entertainment, information, transcription of oral narratives and note taking in meetings where Yup'ik is the dominant language. New writing styles are examined, rather than simply translating the standard categories of English composition. Students 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 and 112, concentrating on development of conversational ability, with presentation of additional grammar and vocabulary. (Prerequisite: ESK 112 or instructor permission.)

ESK 218 3 Credits As Demand Warrants
Inupiaq Composition (3+0)
An examination of the development of written Inupiaq uses to entertain, inform, persuade, transcribe oral narratives and take notes on such occasions as city council meetings. Open to new genres, rather than simply translating the standard categories of English composition. Students receive extensive practice in the Inupiaq orthography and actively participate in 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 and 202. Completes the basic study of the Yup'ik grammar. (Prerequisites: ESK 101, 102, 201, 202 or instructor permission.)

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 instructor permission.)

ESK 417 3 Credits Spring
Advanced Inupiaq Eskimo (3+0) h
Advanced study in Inupiaq Eskimo. Continuation of ESK 212. (Prerequisites: Completion of ESK 111, 112, 211, 212 or permission of instructor.)

Fire Science

FSCI 101 3 Credits Fall
Introduction to Fire Science (3+0)
Career opportunities in fire protection and related fields; history of fire protection; fire loss analysis; public, quasi-public and private fire protection services; specific fire protection functions; fire chemistry and physics.

FSCI 105 3 Credits Spring
Fundamentals of Fire Prevention (3+0)
Organization and function of fire prevention programs, inspections, surveying, mapping, recognition of fire and life safety hazards, fire protection engineering, public fire education and enforcement. (Prerequisite: FSCI 101 or instructor permission.)

FSCI 107 3 Credits Spring
Municipal Fire Tactics and Strategy (3+0)
Principles of fire control through utilization of personnel, equipment and extinguishing agents. (Prerequisite: FSCI 101 or equivalent or permission of instructor)

FSCI 111 3 Credits Fall
Fire Service Organization and Management (3+0)
Review of management, organization, planning, and supervision to meet the needs of the fire service with emphasis on the company officer's role. (Prereequisite: FSCI 101 or instructor permission.)

FSCI 115 3 Credits Alternate Spring
Fire Apparatus and Equipment (3+0)
Fire apparatus design, specifications and performance capabilities, effective utilization of apparatus in fire emergencies. (Prerequisite: FSCI 101 or instructor permission.)

FSCI 117 3 Credits Spring
Rescue Practices (3+0)
Rescue situations and techniques, emergency rescue equipment, automobile extrication, ventilation principles, aircraft emergency situations, structural rescue, water safety and emergency lifesaving principles. (Prerequisites: Advanced First Aid, EMTT 103 or 119 and membership in a fire department or rescue service.)

FSCI 121 3 Credits Alternate Spring
Introduction to Fire Chemistry and Physics (3+0)
Introduction to nomenclatures, principles and procedures of chemistry as related to fire problems.

FSCI 123 3 Credits Alternate Fall
Fire Investigation (3+0)
Determining origin and cause of fires (mechanical, accidental, or incendiary) for structural, wildland and transportation incidents; fire effects on materials; related laws; recognizing and preserving evidence, interviewing witnesses and suspects, rules of arrest and detention procedures, and court discipline. (Prerequisites: FSCI 101 and membership in a fire or law enforcement agency, or permission of instructor.)

FSCI 151 3 Credits Spring
Wildland Fire Control I (3+0)
Designed to provide national certification for both entry-level and experienced fire fighters with fundamental knowledge of wildland fire organization, fire behavior, air operations, suppression methods, safety, the incident command system, portable pumps, water use, and chain saws.

FSCI 155 3 Credits Alternate Spring
Wildland Fire Behavior (3+0)
Provides fire behavior knowledge to determine basic input data for fire behavior calculations such as rate of spread, fire line intensity, flame length, and area/perimeter growth using fire behavior prediction systems. Prepare fire perimeter maps, assess and predict chances of extreme fire behavior conditions, assess fire line data and fire behavior estimations, identify fire suppression limitations, and make recommendations for fire line location and safe control tactics. (Prerequisite: FSCI 151 or instructor permission. Next offered: 1992-93.)

FSCI 156 3 Credits Alternate Spring
Fire Planning Function (3+0)
Provides 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. (Prerequisite: FSCI 151 or instructor permission. Next offered: 1991-92.)

FSCI 157 3 Credits Alternate Fall
Air Operations and Safety (3+0)
Basic use of aircraft in wildland fire operations including helicopter operations, types and capacities, helibase/helispot construction, logistics support and specialized missions. Fixed wing operations include establishment of air bases, retardant operations, aircraft fueling and paracargo support. Emphasis on aviation safety. (Prerequisite: FSCI 151 or instructor permission. Next offered: 1991-92.)

FSCI 158 3 Credits Alternate Fall
Fire Operations Function (3+0)
Overview of the operations function including organization; implementation of the incident action plan; tactical use of crews, engines, bulldozers; appointment of supervisors in accordance with span of control; utilization of fixed wing and rotor wing aircraft. Functional positions of crew boss, staging area manager and strike team leader covered. (Prerequisites: FSCI 151, 155, 157 and 254, or instructor permission. Next offered: 1991-92.)

FSCI 161 3 Credits Alternate Fall
Fire Logistics Functions (3+0)
Overview of the support and service branches of the logistics function within the incident command system. Emphasis on entry-level positions of ordering manager, receiving and distribution manager, base camp manager, equipment manager, and medical unit leader. (Prerequisite: FSCI 151 or instructor permission. Next offered: 1992-93.)

FSCI 162 3 Credits Alternate Spring
Methods of Instruction for Fire Service Training (3+0)
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. (Next offered: 1992-93.)

FSCI 202 3 Credits Fall
Fire Hydraulics (3+0)
Review of applied mathematics; hydraulic principles; applications of formulas and calculations; water supply and distribution. (Prerequisites: FSCI 101 and satisfactory demonstration of basic math skills (pretest), or instructor permission.)

FSCI 204 3 Credits Fall
Hazardous Materials I (3+0)
Basic fire chemistry related to hazardous materials. Problems of health, fire reactivity, and special hazards as encountered by fire fighters, including the State Fire Service Training approved First Responder Operations Level course. (Prerequisite: Satisfactory demonstration of basic chemistry knowledge (pretest) or instructor permission.)

FSCI 205 3 Credits Spring
Hazardous Materials II (3+0)
Advanced information for protection and safety of personnel engaged in response and field cleanup of hazardous materials and substances

at the Hazardous Materials Technician Level (EPA course **65.15**). **(Prerequisite: FSCI 204 or instructor permission.)**

FSCI 206 3 Credits Alternate Spring
Building Construction for 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. Next offered: 1992-93.)

FSCI 208 3 Credits Alternate Fall
Fire Service Records and Reports (3+0)
Use of records and report systems. Involves knowledge and understanding of computers, ANFIRS reporting, maintenance of training, equipment apparatus records, writing reports, and managing documentation. (Prerequisite: FSCI 101 or instructor permission.)

FSCI 212 3 Credits Alternate Fall
Building and Fire Codes (3+0)
Introduction to life safety aspects of Uniform Building Code. Emphasis on Uniform Fire Code for fire inspections on existing buildings, flammable liquids, hazardous materials, and special processes. Preparation for the Uniform Fire Code Exam administered by International Conference of Building Officials. (Prerequisites: FSCI 101 and 206, or instructor permission. Next offered: 1991-92.)

FSCI 214 3 Credits Alternate Spring
Fire Protection Equipment and Systems (3+0)
Portable fire extinguishing equipment, protection systems for specific hazards including sprinkler systems, halon, dry chemical, fire detection, and alarm systems. (Prerequisite: FSCI 101 or instructor permission. Next offered: 1991-92.)

FSCI 252 3 Credits Alternate Spring
Wildland Fire Prevention, Investigation and Enforcement (3+0)
Overview of wildland fire prevention including data collection, problem identification, problem analysis, action planning, fire reporting, fire cause determination, enforcement of laws and ordinances, public fire education, and the economics of fire prevention. (Prerequisite: FSCI 151 or instructor permission. Next offered: 1991-92.)

FSCI 254 3 Credits Fall
Wildland Fire Business Management (3+0)
Fire business management objectives, including duties and responsibilities of fire finance section relating to management practices and programs. Procedures required in various finance positions including financial management of a large complex wildland fire. (Prerequisite: FSCI 151 or instructor permission.)

FSCI 256 3 Credits Alternate Fall
Wildland Fire Planning and Multiple Use Management (3+0)
Fire management and its role in a multiple use resource program. Includes prescribed and wild fire practices, environmental concerns, management goals and objectives, and prefire planning. (Prerequisite: FSCI 151, FSCI 155, or instructor permission. Next offered: 1991-92.)

FSCI 258 3 Credits Alternate Spring
Prescribed Burning and Fuels Management (3+0)
Compares use of different fuels. Evaluates benefits and effect of management practices. Includes prescribed fire procedures and objectives. (Prerequisites: FSCI 151, 155, 158 or 262 and instructor permission. Next offered: 1991-92.)

FSCI 260 3 Credits As Demand Warrants
Fire Research and Development (3+0)
Research and development in the area of fire prevention, detection, prescribed burns, fire suppression, and post suppression.

FSCI 262 3 Credits Alternate Fall
Wildland Fire Control II (3+0)
National certification instruction in tactics for fire line construction, use of hand crews, heavy equipment, water and engines, firing operations, wildland/urban interface and using combinations of resources. For trained and experienced wildland fire fighters. (Prerequisites: FSCI 151, 155, 157, 158, 254 or instructor permission. Next offered: 1992-93.)

FSCI 270 3 Credits Alternate Spring
Incident Command Function (3+0)
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 from initial attack of small, noncomplex fires to larger, more complex initial attack suppression organizations dealing with escape attack situations. (Prerequisites: FSCI 151, 155, 252 or instructor permission. Next offered: 1992-93.)

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 are identified by the initial "F" following the course number. Courses offered only at Juneau are identified with a "J" following the course number. The frequency of offering is identified by location for those courses offered at both units.

FISH 101 3 Credits Fairbanks, Spring
Introduction to Fisheries (3+0) Juneau, Alternate Fall
A survey of the values, habitats, biology, ecology and management of fishes with particular reference to Alaskan fisheries and issues.

FISH 261F 3 Credits Fall
Introduction to Seafood Science and Nutrition (3+0)
Application of scientific and engineering principles in the harvesting, processing, preservation and marketing of Alaska's rich fisheries resources. For sophomore-level natural sciences/environmental studies students. (Prerequisites: CHEM 105 or BIOL 105 or consent of intructor.)

FISH 381 3 Credits As Demand Warrants
Biology of Commercially Important Salmonid Fishes (3+0)
Biology, life history and ecology of economically valuable salmonids. Management of salmonid fisheries. (Prerequisite: BIOL 427.)

FISH 382 4 Credits As Demand Warrants
Biology of Commercially Important Marine Fishes (3+2)
Review of the major marine fish resources of Alaska. Taxonomy, distribution, life history and ecological relationships of marine fishes, with emphasis on demersal fishes, early life history and the effects of fisheries on stocks. (Prerequisite: BIOL 222 [BIOL 209-JJ].)

FISH 383 4 Credits As Demand Warrants
Biology of Commercially Important Invertebrates (3+3)
Topics include the taxonomy, morphology, physiology and ecology of commercially important invertebrates. History of the management and fishery of the major species presented. Emphasis on Alaskan species. (Prerequisite: BIOL 222 [BIOL 209-J].)

FISH 400 3 Credits Fairbanks, Fall
Fisheries Science (F 2+3; J 3+0) Juneau, Alternate Spring
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 200 [STAT 373-J].)

FISH 401 3 Credits Fairbanks, Spring
Fisheries Management (3+0) Juneau, Alternate Fall
Principles, concepts and techniques of fisheries management in terms of their biological, economic, social and political aspects. Topics are stocking and introductions, habitat manipulation, sustainable yield, regulation, management organizations and their responsibilities. Examples of several fisheries are used to clarify concepts and practices. (Prerequisite: BIOL 271. Next offered Juneau: 1993-94.)

FISH 418-J 4 Credits Alternate Fall
Renewable Resource Management Systems (4+0)
Develops abilities to recognize, process and apply critical information in the management of renewable resources by examples from Alaskan fisheries. The computer as a primary tool of resource management. (Prerequisite: STAT 200 [STAT 373-J]. STAT 401 recommended. Next offered: 1992-93.)

FISH 420-J 3 Credits As Demand Warrants
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 [BIOL 281-J].)

FISH 421-J 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 200 [STAT 373-J]. FISH 418 recommended. Next offered: 1992-93.)

FISH 436-J 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 [BIOL 209-J], CHEM 106, FISH 381. Next offered: 1991-92.)

FISH 445-J 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, demonstrations, use of field laboratory techniques, ship- board sampling. (Prerequisite: STAT 200 [STAT 373-J]. Next offered: 1991-92.)

FISH 601-F 3 Credits Alternate Spring
Quantitative Fishery Science (2+3)

FISH 602 3 Credits Juneau, Alternate Fall
Advanced Fisheries Management (2+3) Fairbanks, Alt Spring

FISH 606-J 4 Credits Juneau, Alternate Spring
Finfish and Shellfish Diseases (3+3)

FISH 621-J 4 Credits Alternate Fall
Advanced Fisheries Population Dynamics I (3+2)

FISH 622-J 4 Credits Alternate Spring
Advanced Fisheries Population Dynamics II (3+2)

FISH 651-J 3 Credits Alternate Spring
Fishery Genetics (3+0)

FISH 652-J 3 Credits As Demand Warrants
Use of Electrophoresis in Fisheries (1+4)

FISH 661 3 Credits Alternate Fall
Seafood Processing and Preservation (3+0)

FISH 662 3 Credits Alternate Fall
Seafood Composition and Analysis (3+0)

Foreign Languages

FL 110 2 Credits As Demand Warrants
How to Pronounce French, German, Italian, and Spanish (2+0)
Designed for 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.

FL 200X 3 Credits Fall, Spring
World Literature (3+0) h
(Same as ENGL 200X)
Introduction to the critical reading and appreciation of a wide variety of literary texts from different cultures. Includes exposure to a variety of approaches to myth, poetry, storytelling and drama. Students will gain an understanding of cultural differences and universals in texts from American, American minority, Western European and non-Western sources. Specific content to be announced at time of registration. Course may be repeated for credit when content varies. (Prerequisite: ENGL 111X or permission of instructor.)

French

For information on studying in Europe, see Study Abroad.

FREN 075 3 Credits As Demand Warrants
FREN 076 3 Credits As Demand Warrants
Conversational French I and 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. (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.

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 cultural material. Conducted in French. (Prerequisite: FREN 102 or equivalent.)

FREN 301 3 Credits Fall
FREN 303 3 Credits Spring
Advanced French (3+0) h
Discussions and essays on more difficult subjects or texts. Translations, stylistic exercises, and special grammatical problems. Conducted in French. (Prerequisite: FREN 202 or equivalent or permission of instructor.)

FREN 431 3 Credits Fall
Studies in the Culture of the French Speaking World (3+0) h
Intensive study of selected aspects of the culture of the French speaking world. Conducted in French. Students may repeat course for credit if topic varies. (Prerequisites: FREN 302 or equivalent; junior standing or permission of instructor.)

FREN 432 3 Credits Spring
Studies of Literature in French (3+0) h
Intensive study of authors, literary texts, movements, genres, themes and/or critical approaches. Conducted in French. Student may repeat course for credit when topics vary. (Prerequisites: French 302 or equivalent and at least junior standing, or permission of instructor.)

FREN 487 3 Credits Fall
Translation of French Texts (3+0) 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 302 or equivalent and at least junior standing or permission of instructor. Next offered: 1991-92.)

FREN 488 3 Credits As Demand Warrants
Individual Study: Senior Project h
Designed for 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, Spring
Introductory Geography (3+0) s
World regions, an analysis of environment, with emphasis on major culture realms. Also available via Independent Learning.

GEOG 103 3 Credits Fall
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: 1991-92.)

GEOG 205 3 or 4 Credits Fall, Spring
Elements of Physical Geography (3+0 or 3+3) n
Analysis of processes that form the physical environment and resulting physical patterns. Study of landforms, climate, soils, water resources, vegetation, and their world and regional patterns. Optional laboratory for one additional credit. Also available via Independent Learning. (Offered every Spring at the Northwest Campus.)

GEOG 241 3 credits Spring
Introduction to Geographic Information Systems (2+3)
(Same as NRM 241)
Review of hardware and software components, exploration of several applications and introduction to data structures and basic functions. Several different GIS systems considered. (Prerequisite: Knowledge of PC's or unix workstations desirable.)

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. (Prerequisite: Permission of instructor. Next offered: 1992-93.)

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. Also available via Independent Learning. (Prerequisites: GEOG 101, 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. (Prerequisites: GEOG 101, 205. Next offered: 1991-92.)

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: 1991-92.)

GEOG 309 3 Credits Alternate Spring
Cartography (1+6) s
Graphic techniques for presenting geographic data through the construction of maps, projections and charts. Materials fee: $40.00. (Prerequisite: Permission of instructor. Next offered: 1991-92.)

GEOG 311 3 Credits Alternate Fall
Geography of Asia (3+0) s
Regional geography of Asia, exclusive of the Soviet Union. 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: 1992-93.)

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. (Prerequisites: GEOG 101, 205.)

GEOG 327 3 Credits Spring
Cold Lands (3+0) s
Comparative physical, human, and economic geography of cold regions, with particular attention to Siberia, Greenland, Scandinavia and Canada. Special attention given to different approaches 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: GEOG 101 or 103, 205.)

GEOG 341 4 Credits Fall
Techniques in Geographic Information Systems (3+3)
(Same as NRM 341)
GIS algorithms, data structures, advanced computational topics and analysis of error. Examination of ways traditional planning and management theories and techniques can be implemented in GIS's. (Prerequisite: GEOG 241.)

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: 1992-93.)

GEOG 402 3 Credits Alternate Fall
Culture and Environment (3+0) s
Relationship of cultures with the land they have occupied over time, in the context of the world's major regions. Consideration given to significance of cultural diversity, differing patterns of livelihood, settlement and population change. (Prerequisites: GEOG 101, 205. Next offered: 1991-92.)

GEOG 404 3 Credits Alternate Fall
Urban Geography (3+0) s
A world survey of urbanization with particular emphasis on the accelerating urban revolution. 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: 1991-92.)

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: 1992-93.)

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: 1992-93.)

GEOG 637 3 Credits Alternate Fall
Geography of Northern Development (3+0)
(Same as NORS 637)

Geological Engineering

GE 101 1 Credit Fall
Introduction to Geological Engineering (1+0)
Multiple aspects 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 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 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. (Prerequisite: GEOS 101 or GE/GEOS 261.)

GE 405 4 Credits Spring
Exploration Geophysics (3+3)
Theory and application of gravity, magnetic, electrical, electro-magnetic, radioactive, and seismic methods as used for geophysical exploration. Some field work. (Prerequisites: MATH 200 and PHYS 211 or equivalent.)

GE 420 3 Credits Spring
Subsurface Hydrology (2+3)
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: 1991-92.)

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 214 and 314 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. (Prerequisite: ES 331 or permission of instructor. Next offered: 1991-92.)

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, 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. Term project required. (Prerequisites: GE 365, 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 in Mineral Exploration and Development (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 649 3 Credits Every Fifth Semester
Hazardous and Toxic Waste Management (3+0)
(Same as EQE 649)

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
Survey of four main disciplines of earth science: geology, oceanography, meterology, and astronomy. Lab portion goals: vehicle to learn scientific methodology, evidence to support theories presented in lectures. (Prerequisite: English placement test)

GEOS 101X 4 Credits Fall, Spring
The Dynamic Earth (3+3) n
Physical geology: a study of the earth, its materials, and the processes that effect changes upon and within it. Laboratory training in use of topographic maps and recognition of common rocks and minerals. Laboratory fee: $15.00.

GEOS 102X 4 Credits Spring
Environmental Geology (3+3) n
Application of principles of geological sciences to the solution of practical problems. Origin, distribution, availability and exploitation of earth's mineral and energy resources. Study of geologic hazards including prediction and mitigation. Numerous examples and case studies from Alaska. (Prerequisite: GEOS 101X or instructor permission.)

GEOS 103 3 Credits As Demand Warrants
Lanscapes and Resources of Alaska (3+0)
Geology of Alaska and of the processes which formed it. Origins of mountains, volcanos, islands, and glaciers.

GEOS 104 3 Credits Independent Learning Only
Principles of Geology
Provides an understandng of earth processes (both on the earth's surface and at depth) and origin and classification of major rock types. Other topics include factors that have shaped the Earth, geologic events and processes occurring today, and ideas of future occurrences. Will not substitute for GEOS 101X.

GEOS 105 3 Credits As Demand Warrants
Geology of America's National Parks (3+0)
Explanations and geologic history of prominent geologic features and landforms for which national parks and monuments have been selected.

GEOS 112X 4 Credits Spring
The History of Earth and Life (3+3) n
Historical geologic interpretation, geologic time scale, stratigraphic record and interpretation. Sedimentation and plate tectonics, fossil record and utilization, biostratigraphy, and geologic evolution of the North American continent. Lab examination of fossils, interpretation of geologic maps and stratigraphic columns. Laboratory fee: $10.00. (Prerequisite: GEOS 101X with lab (4 credits) or GEOS/GE 261.)

GEOS 120AX 1 Credit Spring
Earthquakes (1+0) n
Distribution of earthquakes and relation to plate tectonics, catastrophic events in historic times, size and frequency of earthquakes, manmade earthquakes and earthquake prediction and control. For the non-specialist.

GEOS 120BX 1 Credit Spring
Volcanos (1+0) n
Size and frequency of eruptions, characteristics deposits, volcanic rocks, distribution of volcanos in relation to plate tectonics, volcanism and geothermal energy, assessment of volcanic hazards, prediction and control of eruptions. For the non-specialist.

GEOS 120CX 1 Credit Spring
Glaciers: Past, Present and Future (1+0) n
Distribution of glaciers in space and time and their effects on the landscape and humans. Ice age causes, current distribution of glaciers in relation to climate, glacial flow, glacial deposits, interaction of humans with glaciers.

GEOS 212 3 Credits Spring
Geology of Alaska (3+0) n
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. For non-majors. (Prerequisite: GEOS 101X.)

GEOS 213 4 Credits Fall
Mineralogy (2+6) n
Mineral chemistry, atomic structure, elementary crystallography, optical crystallography and descriptive and determinative mineralogy. Instrumental determinative techniques (x- ray diffraction, petrographic microscope). (Prerequisites: GEOS 101X or 261; CHEM 105 and concurrent registration in MATH 107-108.)

GEOS 214 4 Credits Spring
Petrology and Petrography (2+6) n
Origin, occurrence, and classification of igneous, sedimentary, and metamorphic rocks. Laboratory work involves hand lens identification and thin section examination of representative 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)
Physical properties of minerals and rocks, classification, mode of occurrence and economic applications. Role of rock materials in soil formation and fluid flow; influence 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 Engineering. (Prerequisites: GE/GEOS 261, 101X or equivalent. Next offered: 1992-93.)

GEOS 304 3 Credits Fall
Geomorphology (2+3) n
Surface features of the Earth 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 101X.)

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 112X, PHYS 103 or 211, MATH 201, GEOS 214 [or concurrent registration].)

GEOS 321 3 Credits Alternate Fall
Sedimentology (2+3) n
Origin, classification, composition, transportation, deposition, and diagenesis of sediments. Laboratory 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: 1992-93.)

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 101X or 261, and 112X).

GEOS 332 3 Credits Alternate Spring
Ore Deposits and Structure (1+6)
Distribution and characteristics (especially mineralogy, morphology, and structure) of major mineral deposit types with background on structural techniques. Emphasis on application to mineral exploration and development. Laboratory exercises stress recognition of major mineral deposit types, zoning and grade patterns; and use of structural techniques in mineral deposit exploration/development. Laboratory fee: $5.00. (Prerequisite: GEOS 262 or permission of instructor. Next offered: 1992-93.)

GEOS 351 4 or 6 Credits As Demand Warrants
Field Geology (Arranged) n
Practical experience in collecting and presenting basic field data. Includes field mapping of stratigraphic and structural problems, aerial photographs, plane table maps, and preparation of professional reports and geologic maps. Students pay own transportation, subsistence and tuition. Entrance by preregistration only; apply through the department. Early registration recommended. Geophysics option students may enroll for 4 credits if they also register for GEOS 451. All others must take 6 credits. (Prerequisites: Junior standing in geology and permission of instructor.)

GEOS 370 4 Credits Alternate 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 101X or GE/GEOS 261. Next offered: 1992-93.)

GEOS 401 4 Credits Fall
Invertebrate Paleontology (3+3) n
Invertebrate phyla with fossil records and biologic principles. Emphasis on soft-part anatomy and classification, hard-part anatomy of fossil groups and their classification. Laboratory study on fossil materials. (Prerequisite: GEOS 101X 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 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. Laboratory fee: $10.00 (Prerequisite: GEOS 304 or permission of instructor. Next offered: 1991-92.)

GEOS 410 2 Credits Fall
Potential Methods in Geophysics (1+3) n
Theory of potential methods and application to geophysical exploration. 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
Fundamental principles of seismic exploration techniques, beginning with basic laws of seismic wave propagation and ending with practical application of the techniques, including 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
Electrical resistivity and current flow in the earth and the practical application in the realm of geophysical exploration. 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
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 properties and processes in seasonal and perennial snow, frozen ground and sea ice, and transformation of snow to glacier ice examined. Distribution and classification of glaciers, mass balance of glaciers, glacier flow and causes of glaciation. (Prerequisite: MATH 201 or permission of instructor. Next offered: 1991-92.)

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
Concepts and techniques of geophysics including origin of the earth, its structure, and large scale dynamic processes responsible for its surface features. Geophysical techniques including seismology, gravity, magnetometry, and electrical methods discussed along with measurements of the earth's thermal structure, rotation rates, and tide effects. (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: 1991-92)

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 determination of earthquake sources and subsurface structures; techniques for studies of seismotectonics and earthquake prediction. (Prerequisite: Geoscience students: MATH 201; Civil Engineering students: ES 331. Next offered: 1991-92)

GEOS 422 3 Credits Fall
Geoscience Applications of Remote Sensing (2+3) n
Remote sensing and its applications to geologic, environmental and physical sciences. Includes nomenclature, a review of sensing systems, and forms in which data is available. Emphasis on use of LANDSAT, radar imagery, thermal imagery and color infrared photography. (Prerequisites: PHYS 104, 212, junior standing or consent of instructor.)

GEOS 430 3 Credits Spring
Statistics and Data Analysis in Geology (3+0) n
Computer-supported 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 Alternate Fall and Spring
Geology of Mineral Resources (3+0) n
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, 314, 322, 401. Next offered: 1991-92.)

GEOS 432L 2 Credits Alternate Fall and Spring
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. Next offered: 1991-92.)

GEOS 451 2 Credits Summer
Practical Field Geophysics n
A field experience in data acquisition and reduction. Techniques used include gravimetric, radiometric, resistivity, magnetic, electro-magnetic and seismic. Taught concurrently with the last two weeks of GEOS 351. Entrance by preregistration only; apply through the department. Class usually is filled to capacity by February of current year. (Prerequisites: MATH 201, PHYS 212, introductory exploration geophysics, and permission of instructor.)

GEOS 462 4 Credits Alternate Fall
Glacial and Periglacial Geology (3+3) n
Glaciers and their geological processes. Emphasizes recognition and understanding of glacial landforms, sediments, and stratigraphic relations, and implications for paleoclimatology, and paleogeography. Includes non-glacial techniques and methods for interpreting Quaternary sediments. Laboratory fee: $10.00. (Prerequisite: GEOS 304. Next offered: 1991-92.)

GEOS 465 3 Credits Alternate Spring
Geoarcheology (3+0)
(Same as ANTH 465)
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 101X, an introductory course in archeology, or permission of instructor. Next offered: 1991-92.)

GEOS 470 4 Credits Alternate Fall
Petroleum Geology (3+3)
Basic elements required for hydrocarbon accumulation: source, maturation, migration, reservoir, seal, and trap. These elements, and exploration and production practices illustrated using examples of oil and gas fields throughout the world. Lab provides experience with the tools and techniques of surface and subsurface exploration. (Prerequisites: GEOS 314, 321, 322. Next offered: 1991-92.)

GEOS 475OW 2 Credits Spring
Presentation Techniques in the Geosciences (1+3)
Development of oral and written presentation skills in the geological sciences with emphasis on the critical analysis of both peers and the instructor(s). Oral and written presentations of abstracts, resumes, proposals and reports. (Prerequisite: Senior standing in geology.)

GEOS 482 1 Credit Fall, Spring
Geology Seminar (1+0)
A weekly seminar series on a geologic theme of current interest for a complete semester. (Prerequisite: Senior or graduate standing or permission of instructor.)

GEOS 602 3 Credits Alternate Fall
Geophysical Fields (3+0)

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 Alternate Spring
Geochronology (3+0)

GEOS 606 2 Credits Alternate 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 Alternate Fall
Geologic Evolution of Alaska (3+0)

GEOS 613 3 Credits Alternate Spring
Global Tectonics (3+0)

GEOS 614 3 Credits Alternate Spring
Ice Physics (3+0)

GEOS 615 3 Credits Fall
Sea Ice (3+0)

GEOS 616 3 Credits Alternate Spring
Permafrost (3+0)

GEOS 617 3 Credits Alternate Fall
Glaciers (3+0)

GEOS 620 3 Credits Alternate Spring
Geodynamics (3+0)

GEOS 621 3-4 Credits As Demand Warrants
Advanced Petrology (2-3+3-6)

GEOS 622 4 Credits As Demand Warrants
Advanced Clastic Petrology (3+3)

GEOS 625 3 Credits Alternate Fall
Mountain Belts of the World (3+0)

GEOS 626 3 Credits As Demand Warrants
Structural Analysis (3+0)

GEOS 631 3 Credits Alternate Spring
Advanced Geochemistry (1-3+0)

GEOS 632 4 Credits As Demand Warrants
Advanced Study of Mineral Deposits (3+3)

GEOS 635 1-4 Credits As Demand Warrants
Advanced Economic Geology (1-4+0-3)

GEOS 636 2 Credits Fall
Scientific Methods, Strategies and Tools in Geology (2+0)

GEOS 637 4 Credits As Demand Warrants
Rock-Forming Minerals (3+3)

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 643 3 Credits Alternate Fall
Sandstone Depositional Environments (3+0)

GEOS 644 3 Credits Alternate Spring
Advanced Stratigraphy (3+0)

GEOS 645 3 Credits Alternate Fall
Advanced Carbonate Sedimentology (3+0 or 2+3)

GEOS 646 3 Credits As Demand Warrants
Seismic Stratigraphy (2+3)

GEOS 647 3 Credits As Demand Warrants
Advanced Sedimentology (3+0)

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)

GEOS 661 3 Credits Alternate Spring
Microwave Active Remote Sensing (3+0)

GEOS 662 3 Credits Alternate Fall
Microwave Scattering from Land, Sea and Ice (3+0)

German

For information on studying in Europe, see Study Abroad.

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.

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 301 3 Credits Fall
GER 302 3 Credits Spring
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 431 3 Credits Fall
Studies in the Culture of the German Speaking World (3+0) h
Study of the cultures of the German speaking world. Conducted in German. Students may repeat course for credit if topic varies. (Prerequisites: GER 301 or equivalent; junior standing or permission of instructor.)

GER 432 3 Credits Spring
Studies of Literature in German (3+0) h
Intensive study of authors, literary texts, movements, genres, themes and/or critical approaches. Conducted in German. Student may repeat course for credit when topics vary. (Prerequisites: GER 302 or equivalent and at least junior standing, or permission of instructor.)

GER 487 3 Credits Fall
Translation of German Texts (3+0) 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 302 or equivalent and at least junior standing, or permission of instructor. Next offered: 1991-92.)

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)
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. 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 203 3 Credits Independent Learning Only
Science of Nutrition
Principles of nutrition and their relationship to the life cycle. Importance of nutrition awareness and good dietary habits stressed.

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 100X 3 Credits Fall, Spring
Modern World History (3+0) s
Significant aspects of modern world history, using either a chronological or an issues approach to be announced when offered. The chronological approach will examine major global developments in the twentieth century, while the issues approach will deal with such aspects of the modern world as revolutionary change, the interaction of peoples, ideology, and the historical background of significant contemporary events.

HIST 101 3 Credits Fall
Western Civilization (3+0) s
Origins and major political, economic, social, and intellectual developments of western civilization to 1500. Also available via Independent Learning.

HIST 102 3 Credits Spring
Western Civilization (3+0) s
Major political, economic, social, and intellectual developments of western civilization since 1500. Also available via Independent Learning.

HIST 103 3 Credits As Demand Warrants
History of the Yukon-Kuskokwim Delta (3+0) s
The region's history beginning with oral traditions about the creation of the area, and ending with passage of the Alaska Native Land Claims Act in 1971. Concentrates on Yup'ik social, economic, and educational changes, including both native and non-native accounts. 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 105)
Cultural history of the Seward Peninsula peoples for the last 10,000 years using physical anthropology, ethnography, ethnohistory, linguistics, archaeology, social anthropology, ecology, and climatology. Eskimo and Euro-American cultures which have existed in western Alaska.

HIST 110 3 Credits Fall, Spring
History of Alaska Natives (3+0) s
The history of Alaska Natives from contact to the signing of the Land Claims Settlement Act.

HIST 115 3 Credits Independent Learning Only
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: 1991-92.)

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: 1991-92).

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. Both courses also available via Independent Learning.

HIST 200 3 Credits As Demand Warrants
Heritage of Alaska Natives (3+0)
Alaska Native cultures, kinship systems, world views and social organizations. Covers pre-contact days to the present including effects of the Native Land Claims Act.

HIST 201 3 Credits As Demand Warrants
History of the Bering Straits (3+0) s
Covers prehistory, exploration and permanent settlement, material culture, religion, education. Focus on the influence these factors have had on development of the region. Includes analysis of perceptions of others in writings about the region.

HIST 244 3 Credits As Demand Warrants
Movies: Mirror of the World (3+0) s
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)
Techniques of regional and local historical research using exploration accounts, oral history, education reports, census studies, newspapers, etc. Final project of original research 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)
The Gold Rush Era of 1880-1905 in Alaska and the Yukon. Emphasis on the Klondike, but Juneau, Nome and Fairbanks are also investigated. Fact and fiction 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: 1991-92.)

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: 1991-92.)

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: 1992-93.)

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: 1991-92.)

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 parliamentary democracy and welfare systems, cooperation and neutrality, and Scandinavia's experience in the world wars. (Prerequisite: HIST 101 or 102 or permission of the instructor. Next offered: 1992-93.)

HIST 321 3 Credits Alternate Fall
HIST 322 3 Credits Alternate Spring
English History (3+0) s
Fall semester: Pre-Roman Britain to the end of the Puritan Revolution, emphasizing social and political developments. Spring semester: From the restoration of 1660 to the present, emphasizing social, economic, and political developments. Attention given to the British Empire and Commonwealth. (Next offered: 1991-92.)

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: 1992-93.)

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: 1992-93.)

HIST 340 3 Credits Fall
Russian Eastward Expansion (3+0) s
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, 102 or permission of instructor.)

HIST 341 3 Credits Fall
History of Alaska (3+0) s
Alaska from prehistoric times to the present, including major themes such as Native Alaska, colonial Alaska, military Alaska, statehood, Alaska Native Claims Settlement Act of 1971, and the Alaska National Interest Lands Act of 1980. Also available via Independent Learning. (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. 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 345 3 Credits Independent Learning Only
Maritime History of Alaska (s)
A survey of Alaska's maritime history with emphasis on exploration and resource utilization by Natives, Russians and Americans. (Prerequisite: Junior standing 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: 1992-93.)

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: 1992-93.)

HIST 355 3 Credits Alternate Spring
Canadian History: 1867 to Present (3+0) s
The political, social, and economical development of Canada from Confederation to the present. (Next offered: 1992-93.)

HIST 375 3 Credits Alternate Fall
History of the Northern Pacific (3+0) s
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: 1991-92.)

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. Also available via Independent Learning. (Prerequisite: Junior standing or permission of instructor. Next offered: 1991-92.)

HIST 382 3 Credits Alternate Spring
History of Circumpolar Research (3+0) s
(Same as LS 382)
Studies the history of arctic and sub-arctic sciences through geological, biological and atmospheric sciences and the people through anthropology, ethnography, linguistics and history. Cold regions engineering and technology research in education, government and law covered. The literature and source material on these fields analyzed. (Prerequisite: HIST 110 or 115 or ANTH 242 or BIOL 104 or permission of instructor. Next offered: 1991-92.)

HIST 384 3 Credits Alternate Fall
20th Century Circumpolar History (3+0) s
A comparative history of the circumpolar north, including Alaska, Siberia, Scandinavia, Greenland and Canada. Focus on 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: 1991-92.)

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: 1991-92.)

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: 1992-93.)

HIST 405 3 Credits Alternate Fall
Modern Germany (3+0) s
Germany from 1848 to present: unification, the Second Empire, WWI, the Weimar Republic, National Socialism, WWII, the Holocaust, the creation of two post-war German states with different societies and reunification. Emphasis on political, social and economic developments. (Prerequisite: HIST 101 or 102. Next offered: 1991-92.)

HIST 420 3 Credits Alternate Spring
Approaches to Women's History (3+0) s
A theoretical and topical approach covering 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: 1991-92.)

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: 1991-92.)

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: 1991-92.)

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. (Prerequisite: HIST 131 or permission of instructor. Next offered: 1991-92.)

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 442 3 Credits Independent Learning Only
History of the American Military (s)
The military's place in American life and society from the Colonial era to the early 1980's. Role of the military institution in shaping the nature of American society while reflecting the character of the society it serves.

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: 1991-92.)

HIST 451 3Credits Independent Learning Only
History of U.S. Foreign Policy (s)
Evolution of U.S. foreign policy with emphasis on post-World War II period and emergence of a bipolar distribution of power. Includes discussion of the Vietnam War, American policy in the Middle East, and the foreign policy views of the Kennedy, Nixon, Carter and Reagan administrations. (Prerequisite: Junior standing or permission of the instructor.)

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: 1992-93.)

HIST 460 3 Credits Spring
Russian America (3+0) s
A history of Russian exploration and settlement in North America, including the impact of this contact on the indigenous peoples.

HIST 470W 3 Credits Spring
Researching and Writing Alaska History (1.5+3) w
Introduction to research methodology, differing historical interpretations, resources used by historians, such as primary materials and secondary sources, and appropriate footnoting. Research paper required based on archival sources. (Prerequisite: Senior standing or permission of instructor.)

HIST 475 3 Credits Fall
Historiography (3+0) s
Historical interpretation by different historians on a topic of the student's choosing. (Prerequisites: Senior standing and instructor permission.)

HIST 476 3 Credits Spring
Historical Method (3+0) s
Preparation and writing of a senior thesis using primary research materials on a topic of the student's choosing. (Prerequisites: HIST 475 and instructor permission.)

HIST 600 3 Credits Fall
Perspectives on the North (3+0)
(Same as NORS 600)

HIST 690 3 Credits Alternate Spring
Researching and Writing Public Northern History (1+3)
(Same as NORS 690)

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 are explored. These are 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 As Demand Warrants
Introduction to Human Services (3+0)
Examines purposes and functions of the various social and human service programs which constitute society's organized response to social problems. Federal, state and local programs and agencies are described, including those directed at child welfare, alcohol and drug abuse, mental health, juvenile delinquency, and discrimination. (Prerequisite: 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 presented demonstrate ways the normal healthy state may be disrupted by external or internal influences. Natural histories of major types of disease are reviewed.

HMSV 210 3 Credits Alternate Fall
Crisis Intervention (3+0)
Theoretical foundations and appropriate techniques and strategies for helping individuals, families, and groups during stressful situations. Application of the crisis approach to 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 or permission of instructor. Next offered: 1992-93.)

HMSV 215 3 Credits As Demand Warrants
Death and Dying (3+0)s
An interdisciplinary study of thanatology with material from multicultural, humanistic and life span perspectives. Topics include attitudes in societies, individual responses to bereavement, children's understanding of death and ethical issues associated with choices at the end of life. (Prerequisite: Instructor permission.)

HMSV 225 2 Credits As Demand Warrants
Case Management (2+0)
(Same as SWK 225)
Basic knowledge and skills to develop service plans in human service work and to maintain appropriate case records. Legal and ethical issues in case management considered and discussed.

HMSV 230 3 Credits As Demand Warrants
Alcoholism: Causes and Consequences (3+0)
Examination of theories concerning the causes of alcoholism. Physical and psychological factors, personality disorders or disease states. Data supporting these theories evaluated. (Prerequisite: SOC 101 or PSY 101 or permission of instructor.)

HMSV 255 3 Credits Fall
Foundations of Counseling I (3+0)
(Same as PSY 255)
Survey of counseling philosophy approaches and types of counseling systems in use. Topics include approach and system match; psychoanalysis, behavior therapy, and humanistic approaches; counseling ethics and ethical problems. (Prerequisites: PSY 101, 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. Specific topics announced. (Prerequisite: Permission of instructor.)

HMSV 330 3 Credits As Demand Warrants
Alcoholism: Treatment and Prevention (3+0)
Survey and evaluation of alcoholism and alcohol abuse treatment and prevention programs with emphasis 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. Specific counseling strategies studied in-depth include crisis intervention, individual techniques such as the rational therapies, and specific behavioral approaches. Other topics include role of the counselor in community education and consultation, methods of promoting community change and issues in cross-cultural counseling. (Prerequisite: HMSV 255 or PSY 355.)

HMSV 410 3 Credits As Demand Warrants
Management of Human Services Programs (3+0)
Basic methods of program management and personnel supervision, with emphasis on applications in rural or isolated locations. Supervised in-service activities. (Prerequisite: HMSV 255.)

HMSV 415 3 Credits As Demand Warrants
Group Processes (3+0)
Study of various groups including problem solving/task-oriented, encounter, therapy, career guidance, and assertive training. Different theoretical orientations to group counseling discussed. (Prerequisites: HMSV 255, 356.)

HMSV 445 3 Credits Fall
Community Psychology (3+0)
(Same as PSY 445)
Foundations of community psychology including community assessment consultations. Community assessment activities explored include selecting study areas, surveys, evaluation of services, and use of results. During the community consultation portion, education, prevention, and service issues are covered. Attention 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 As Demand Warrants
Practicum in Human Services
Supervised work experience in case management including interviewing, assessment, facilitating, and intervening. Enrollment can be prior to or concurrent with placement in a human service agency. Student's study and work directed by a university instructor and an agency supervisor. (Prerequisites: HMSV 255. Student must be a major in the program.)

Human Service Technology

HST 101 3 Credits Fall
Introduction to Human Services (3+0)
The generalist human service model focusing on creative problem solving, assessment, goal setting, planning and evaluation in human services.

HST 105 3 Credits Fall
Personal Awareness and Growth (3+0)
Interpersonal and intrapersonal communication explored. Self therapy process used as format to identify personal enrichment opportunities and to increase awareness of self and others.

HST 110 3 Credits Spring
Social Problems and Community Resources
Major social problems emphasizing mental illness, domestic violence and child abuse. Identification and discussion of community human service resources.

HST 115 3 Credits Spring
Human Growth and Development (3+0)
Biological, intellectual, social and personality aspects of human development from conception through old age. (Prerequisite: PSY 101.)

HST 120 3 Credits Spring
Cultural Diversity in Human Services (3+0)
The impact of culture on the delivery of human services with emphasis on Alaskan Native cultures; examination of relationship of multicultural and multi-ethnic concepts.

HST 125 3 Credits Spring
Introduction to Addictive Processes (3+0)
Study of addiction from a disease model with emphasis on chemical dependency issues; symptoms assessment, intervention, treatment and recovery. Twelve step and self-help programs introduced.

HST 130 3 Credits Fall
Family and Family of Origin Issues (3+0)
Overview of the family from a family systems approach as it relates to providing human services. Emphasis on understanding family of origin and adult children of dysfunctional families issues.

HST 205 3 Credits Spring
Basic Principles of Group Dynamics and Therapeutic Activities (3+0)
Concepts and techniques of working with groups including establishing group goals, effective group interaction, termination and evaluation. Development of therapeutic group activities will also be addressed.

HST 210 3 Credits Fall
Crisis and Grief Counseling (3+0)
Helping people in crisis from a theoretical and experiential perspective. Understanding how people feel, think and behave during periods of crisis and grieving. Suicide, violence, life transitions and AIDS explored.

HST 215 3 Credits Fall
Individual Interviewing and Assessment (3+0)
The process of gathering client information and making initial assessment observations required in human service documentation, focusing on the development of one-to-one interviewing skills.

HST 220 3 Credits Spring
Human Service Case Mangement (3+0)
A systematic approach to providing case management in human service settings. Topics include the role of the case manager and the stages of case management including engagement, assessment, planning, accessing resources, coordination and termination.

HST 230 2 Credits Fall, Spring
Human Service Practicum I (0+8)
Integration of human service theory with skill-based training through a professional, supervised experience in a human service agency. Practicum requires a minimum of 8 hours of placement per week. (Prerequisites: HST 101, 105, 110, 120, 125 and permission of instructor.)

HST 231 2 Credits Fall, Spring
Human Service Practicum II (0+8)
Continuation of HST 230. (Prerequisite: HST 230.)

HST 240 1 Credit Fall, Spring
Human Service Seminar I (1+0)
Human service documentation including progress notes, social history, mental status exam, and journaling. Student shared learning and peer support based on practicum experience. (Prerequisites: HST 101, 105, 110, 120, 125.)

HST 241 1 Credit Fall, Spring
Human Service Seminar II (1+0)
Human service documentation skills, student shared learning and peer support based on practicum experience. (Prerequisite: HST 240.)

HST 250 1-4 Credits As Demand Warrants
Current Issues in Human Service (1-4+0)
Selected current issues of importance to the human service field. Emphasis on issues impacting Alaskan communities. Repeatable for credit by HST majors to a maximum of 6 credits.

Humanities

HUM 101 3 Credits As Demand Warrants
The Humanities: A Cultural Perspective (3+0) h
Examination of humanities using both Western Civilization and the Yup'ik cultures as bases. Introduction of fundamental principles of Yup'ik and Non-Yup'ik performing and visual arts, ideas and cultural developments that have stirred and enriched civilization, and 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)
Survey of Alaskan literature, poetry and drama with emphasis on appreciation of literature written by both natives and non-Natives. Students read examples from oral Native tradition, the frontier era, and meet 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 fine 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 scientific methods and principles 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
Examines roles played by the city and the wilderness in contemporary imagination using movies and books; teaches skills of movie reviewing.

HUM 241 3 Credits As Demand Warrants
HUM 242 3 Credits As Demand Warrants
Eskimo and World Literature (3+0)
Examination of literature of the Eskimo peoples as well as of other Native North Americans, Asians, and Europeans. Universal and timely themes are compared which communicate aspects of the human experience valid across cultures and times. HUM 241 is not prerequisite to HUM 242.

HUM 329O 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: 1991-92.)

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. (Prerequisite: 3 credits in the visual arts or permission of instructor. Next offered: 1991-92.)

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. (Prerequisite: MUS 123 or 124, or permission of instructor. Next offered: 1991-92.)

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: 1991-92.)

HUM 492 3 Credits Alternate Spring
Senior Seminar (3+0) h
Consideration of the humanities at the University of Alaska and on alternate approaches elsewhere. Student project paper required with oral presentation and defense. (Prerequisite: Open requirements, or by permission of the instructor. Next offered 1991-92.)

Japanese

For information on studying in Japan, see Study Abroad.

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. Cultural dimension is 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 enhanced by using 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) h
Development of 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. (Prerequisite: JPN 202 or equivalent.)

JPN 332 3 Credits Alternate Spring
Japanese Cultural Traditions (3+0) h
A study of Japanese cultural traditions as revealed in the literary, visual, and performing arts. Discussion of literature in English translation is 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. (Prerequisite: Junior standing or consent of instructor. Next offered: 1991-92.)

JPN 333 3 Credits Alternate Spring
Twentieth Century Japanese Prose Fiction (3+0) h
A study of selected novels, short stories, and film scripts in translation representative of styles and themes which characterize twentieth century Japanese literature. 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. (Prerequisite: Junior standing or consent of instructor. Next offered: 1992-93.)

JPN 432 3 Credits Spring
Studies of Literature in Japanese (3+0) h
Intensive study of authors, literary texts, movements, genres, themes or critical approaches. Conducted in Japanese. Student may repeat course for credit when topics vary. (Prerequisites: JPN 302 or equivalent; at least junior standing or permission of instructor.)

Journalism — Broadcasting

JB 101 3 Credits Fall, 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. Also available via Independent Learning.

JB 102 3 Credits Fall, Spring
Introduction to Broadcasting (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, 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. Darkroom procedures including black and white film processing and printing, photograph design and composition. Students must have use of an adjustable camera. Laboratory fee: $40.00. (Course may not be used to meet major or minor requirements in Journalism-Broadcasting).

JB 204 3 Credits Spring
Photojournalism (2+3) h
Fundamentals of visual communication through photography; issues and techniques of modern photojournalism; news, features, sports, fashion, and the photo essay assignments as encountered at a daily newspaper; preparation of photographs for publication. Students must have basic 35mm camera equipment. Laboratory fee: $40. (Prerequisite: JB 203 or instructor permission.)

JB 215 3 Credits Fall, 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 217 3 Credits Spring
Introduction to the Study of Film (2+2) h
(Same as ENGL 217)
A broad historical survey of cinematic art with emphasis on its humanistic and artistic aspects. (Prerequisite: ENGL 111.)

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 301W 4 Credits Fall, Spring
News Reporting and Writing (2+4) h
Finding and getting the story, writing the lead, developing story structure, writing on deadline, editing copy, writing headlines and captions, cropping and sizing pictures, and writing for broadcast news. Laboratory fee: $10. (Prerequisites: ENGL 111 and ENGL 211, 213 or 311, junior standing or instructor permission.)

JB 308 3 Credits Fall
Film and TV Criticism (3+0) h
Theoretical approaches to viewing, analyzing and evaluating film and television program content.

JB 311W 3 Credits Fall, Spring
Magazine Article Writing (2+1) h
Writing articles for publication. Students repeating the course limited to six credits. (Prerequisite: 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. Materials fee: $40.00. (Prerequisite: JB 215 or permission of instructor.)

JB 317W 3 Credits Spring
Broadcast Journalism (3+0)
Overview of the broadcast journalism field. Emphasis on intensive broadcast news writing practice, including interviewing techniques, ethical issues and current controversies, structure of television and radio news operations and broadcast reporting experiences. (Prerequisite: JB 301 or instructor permission.)

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
Publication Editing (3+0)
Publication 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. Materials fee: $20.00. (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
Mass Media and Society (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 400 1-3 Credits Fall, Spring
Media Practicum (1+6)
Practical training in print or electronic communication. Participation at an approved publication or broadcast station required. (Prerequisite: Senior standing or permission of instructor.)

JB 402 3 Credits Fall and Spring
Advanced Photography (2+3)
Continuation of JB 203. Emphasis on continuing development of photographic skills by application of basic technical skills to a variety of areas of photography. Laboratory fee: $40. (Prerequisite: JB 203 or instructor permission.)

JB 407 3 Credits Spring
Broadcasting Programming (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 408 3 Credits Alternate Fall
Broadcast Station Management (3+0)
Overview of broadcast station management, including management theories, media competition, media research, regulatory issues of concern to managers, organizational planning, and future trends in media. Case studies in practical problem solving techniques. (Prerequisites: Senior standing or permission of instructor. Next offered: 1991-92.)

JB 411W 3 Credits Fall, 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
Electronic Newsgathering (2+2)
Electronic news gathering, electronic field production using remote videotape equipment. Scriptwriting, budgets, location sound recording, interview techniques, editing, videography, and other aspects of field production. Materials fee: $40.00. (Prerequisites: JB 316, 317.)

JB 416 3 Credits Alternate Fall
Advanced TV News Production (1+6)
In-depth experience with television news production including electronic newsgathering. Emphasis on producing broadcast quality news footage and packages. Materials fee: $40.00. (Prerequisites: JB 316, 317 and 415.)

JB 424 3 Credits Spring
Magazine Production (2+3)
Writing, photography, editing, design, layout, advertising, and circulation through the editing and publication of a magazine under journalism faculty supervision. Materials fee: $20.00. (Prerequisite: JB 301.)

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. (Prerequisite: JB 301 or permission of instructor.)

JB 444W 3 Credits Fall, Spring
Advanced News Reporting (2+2) h
Advanced reporting of news with emphasis on public affairs. Develops sophisticated news judgment, writing and investigative reporting skills for print and electronic media. Laboratory fee: $10.00. (Prerequisites: JB 301, junior standing or permission of instructor.)

Justice

JUST 110 3 Credits Fall, 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. Also available via Independent Learning.

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
Origins of Law (3+0) s
(Same as PS 250)
The study of the historical, social, cultural, intellectual and political origins of the legal system, legal culture and laws of the U.S. Includes discussion of schools of jurisprudence and legal interpretation; the development of common and colonial law through constitutional interpretation; the role of legal profession; and selected current legal practices and issues.

JUST 251 3 Credits Spring
Criminology (3+0) s
The study of the major areas of deviant behavior and its relationship to society, law, and law enforcement, including the theories of crime causation. (Prerequisite: 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: 1991-92.)

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: 1992-93.)

JUST 303 3 Credits Fall
Introduction to Legal Processes (3+0)
(Same as PS 303)
The purpose and function of law in society, with a focus on legal reasoning and decision- making 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, Spring
Practicum
A research- oriented exercise 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, Justice 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, JUST 110.)

JUST 335 3 Credits Spring
Women, Crime and Justice
Interaction of women with the American justice system focusing on women as victims, offenders and working professionals in justice agencies. (Prerequisites: JUST 110 and 251.)

JUST 340 3 Credits Fall
Rural Justice in Alaska (3+0) s
Indian justice system including historical development of the Federal/Indian relationship, constitutional basis for federal power over Indians, relationship of tribes in Alaska to the state and federal justice agencies, the effect of urban life on native peoples, the issue of cultural conflict when imposing the western system of justice on native offenders.

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)
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.)

JUST 452 3 Credits Spring
Comparative Criminal Justice (3+0) s
The study of crime problems, legal systems and the organization and performance of criminal justice agencies (police, courts, corrections, juvenile) in selected democratic, socialist and developing countries. Includes England, Soviet Union, China and Japan, selected developing countries. (Prerequisite: JUST 110 or PS 201 or PS 202 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, 251, or senior standing.)

JUST 475 3-9 Credits Fall, Spring
Internship
Supervised work experience in criminal justice agencies. (Prerequisite: Permission of director of intern program. Note: Department approval required for 9 credits.)

JUST 492 Variable Credit Fall, 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.)

JUST 651 3 Credits Alternate Fall
Justice and Social Control in the Circumpolar North (3+0)
(Same as NORS 651)

Korean

For information on studying in Korea, see Study Abroad.

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 cultural material. Conducted in Korean. (Prerequisite: KORE 102 or equivalent.)

KORE 232 3 Credits Alternate Spring
Korean Culture (3+0)h
An overview of Korean cultural traditions as revealed in the life styles, ways of thinking, literature, and the arts. Lectures on painting, architecture, shamanistic rituals, and performing arts accompanied by video tapes and films. (Next offered: 1992-93.)

Library Science

LS 100 1 Credit Fall, Spring
Library and Information Strategies (1+0)
Principles of information organization and how libraries can provide access to information and scholarly resources. Emphasis on use of a library via distance delivery methods. For students who do not have direct physical access to the Rasmuson Library.

LS 101 1 Credit Fall, Spring
Library Skills (0+0)
A course in college library skills and some resources and facilities common to academic libraries in general and to the Rasmuson Library in particular.

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 literature 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 before or during the semester when the student prepares a term paper for an upper division course. Course may be repeated when there 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)
Studies the history of arctic and sub-arctic sciences through geological, biological and atmospheric sciences and the people through anthropology, ethnography, linguistics and history. Cold regions engineering and technology research in education, government and law covered. The literature and source material on these fields analyzed. (Prerequisite: HIST 110 or 115 or ANTH 242 or BIOL 104 or permission of the instructor. Next offered: 1991-92.)

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. Also available via Independent Learning.

LING 216 3 Credits Alternate Fall
Languages of the World (3+0) h
A comprehensive survey of the world's languages — past and present. Topics 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: 1991-92.)

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)
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 teaching styles. Roles of the second language teacher and their appropriateness covered. Presents techniques and activities consistent with specific language teaching methods and adaptation of these methods to the needs of western Alaskan classrooms. (Prerequisite: Classroom experience.)

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 Fall
Introduction to Phonetics and Phonology (3+0)
Scientific study of human speech sounds, mechanism of their production, and sound systems of languages. (Prerequisite: Upper division standing or permission of instructor. Next offered: 1991-92.)

LING 320 3 Credits Alternate Spring
Introduction to Syntactic Theory (3+0) h
Study of 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: 1991-92.)

LING 340 3 Credits Every Third Spring
Aspects of Bilingualism (3+0) h
Cognitive, linguistic, sociopolitical, and educational aspects of bilingualism at both the individual and societal levels, including factors contributing to language maintenance and language shift. (Prerequisite: LING 101 or permission of instructor. Next offered: 1993-94.)

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: 1991-92.)

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: 1991-92.)

LING 420 3 Credits Every Third Spring
Semantics (3+0) h
A systematic exploration of the nature of meaning in human language. Focus is on historical and contemporary approaches to understanding problems of reference, categorization, and lexical relationships in meaningful contexts. (Prerequisite: LING 101 or permission of instructor. Next offered: 1991-92.)

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: 1993-94.)

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: 1993-94.)

Marine Science and Limnology

MSL 111X 3 Credits Juneau Alternate Fall
The Oceans (3+0) n Fairbanks Spring
Introduction to the classic disciplines of ocean science beginning with definitions and history of oceanography. Emphasis is on descriptive biological, physical, chemical and geological marine science. Additional topics include scuba, demonstrations of marine research instrumentation, and current oceanographic topics. (Next offered Juneau: 1991-92.)

MSL 411 3 Credits Juneau As Demand Warrants
Current Topics in Oceanographic Research (3+0) Fairbanks Alternate Fall
Study of research problems from biology, chemistry, geology and physics. Topics 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: 1992-93.)

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: 1991-92.)

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 3 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 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.

DEVELOPMENTAL MATHEMATICS

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
An individual tutorial lab. 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.)

MATHEMATICS

MATH 107 3 Credits Fall, 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, 161, or 171. Also available via Independent Learning. (Prerequisites: Two years of high school algebra and MATH 107 placement or higher.)

MATH 108 2-3 Credits Fall, Spring
Trigonometry (2-3+0) m
A study of the trigonometric functions. Also available via Independent Learning. (Prerequisite: MATH 107 or concurrent registration in MATH 107.)

MATH 131X 3 Credits Fall, Spring
Concepts and Contemporary Applications of Mathematics (3+0) m
Applications of mathematics in modern life including applications of graph theory in management science; uses of probability and statistics in industry, government and science; and applications of geometry to engineering and astronomy. Problem solving emphasized. (Prerequisites: High school geometry and algebra II.)

MATH 132X 3 Credits Spring
Concepts of Mathematics (3+0) m
Mathematical thought and history for students with a limited mathematical background. Mathematical reasoning rather then formal manipulation. Topics may include number theory, topology, set theory, geometry, algebra and analysis. (Prerequisites: MATH 131X.)

MATH 161 3 Credits Fall, Spring
Algebra for Business and Economics (3+0) m
Functions of one and several variables with attention to linear, polynomial, rational, logarithmic, and exponential relationships. Geometric progressions as applied to compound interest and present value. Linear systems of equations and inequalities. Note: No credit may be earned for more than one of MATH 107, 161, or 171. (Prerequisites: Two years of high school algebra and MATH 161 placement or higher.)

MATH 181 3 Credits
Finite Math (3+0) m
Topics in matrix theory including Markov chains, linear programming, simplex method. Partitions, binomial and multinomial theorems, counting techniques, probability and finite stochastic processes. May be used as a prerequisite for STAT 200. (Prerequisite: DEVM 070 or placement.)

MATH 200 4 Credits Fall, Spring
MATH 201 4 Credits Fall, Spring
MATH 202 4 Credits Fall, 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 200, 262 or 272. MATH 200 and 201 also available via Independent Learning. (Prerequisites: MATH 107, 108.)

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. Also available via Independent Learning. (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. Also available via Independent Learning. (Prerequisite: MATH 205.)

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 instructor permission.)

MATH 262 4 Credits Fall, Spring
Calculus for Business and Economics (4+0) m
Ordinary and partial derivatives. Maxima and minima problems, including the use of Lagrange multipliers. 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 200, 262 or 272. (Prerequisite: MATH 161.)

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 200, 262 or 272. (Prerequisites: MATH 171 or 107 and 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, 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)
Includes a detailed study of certain important periods of history as examined by such thinkers as Plato, B. Russell, D. Hilbert, L.E.J. Brouwer and K. Godel. For students of mathematics, science, history and philosophy. (Prerequisite: MATH 202 or permission of instructor. Next offered: 1992-93.)

MATH 307 3 Credits Fall
Discrete Mathematics (3+0)
Logic, counting, sets and functions, recurrence relations graphs and trees. Additional topics chosen from probability theory. (Prerequisite: MATH 201 or 203 or permission of instructor.)

MATH 308 3 Credits Spring
Abstract Algebra (3+0)
Theory of groups, rings and fields. (Prerequisite: 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.)

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 401W 3 Credits **Fall**
MATH 402W 3 Credits **Spring**
Advanced Calculus (3+0)
A rigorous treatment of one and several dimensional calculus. Includes mappings from n-space and their continuity, differentiability and integrability properties as well as sequences and series. (Prerequisites: MATH 215 or 202 for 401; MATH 401 for 402.)

MATH 404OW 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 202 and 215. Recommended: MATH 314 and/or 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 200.)

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. (Prerequisite: 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 selected from combinatorics, probability, statistics, perturbation, numerical analysis, and differential equations. Students develop a modeling project. (Prerequisite: MATH 201. Recommended: One or more of MATH 302, 314, STAT 300, 401; and some programming experience.)

MATH 490 1 Credit **Fall**
Senior Seminar (1+0)
Advanced topics selected from areas outside the usual undergraduate offerings. A substantial level of mathematical maturity is assumed. (Prerequisites: At least one of MATH 308 or 401.)

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 (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

A $25.00 per semester student computing facility user fee is assessed for School of Engineering courses. This fee is in addition to any lab/material fees.

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 with minimum mathematical background who desire a basic understanding of flight. (Prerequisites: High school algebra and general science.)

ME 302 4 Credits **Spring**
Mechanical Design I (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, 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, 346).

ME 321 3 Credits **Fall**
Industrial Processes (2+3)
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 334 3 Credits **Fall**
Elements of Material Science/Engineering (2+3)
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.)

ME 403 4 Credits **Spring**
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 **Fall**
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, 301.)

ME 409 3 Credits Spring
Controls (2+2)
Analysis and design of mechanical, electrical, and human control systems. (Prerequisites: ES 201, 301. Corequisite: ME 408.)

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 415W 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, ME 313.)

ME 416 3 Credits Fall
Design of Mechanical Equipment for the Petroleum Industry (3+0)
Design, selection, and operation of equipment used in production and processing of crude oil and gas. Instrumentation and control systems used with mechanical equipment. (Prerequisites: ES 341, 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)
Covers 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. For the person without mechanical experience. Materials fee: $10.00.

Military Science

MILS 100 1 Credit Fall
MILS 200 1 Credit Spring
Outdoor Skills Laboratory (0+2)
Fundamentals of orienteering, marksmanship, arctic survival, skiing, and snowshoeing. Emphasis on practical work. The same skills are not taught both semesters. (Corequisite: Concurrent registration in another basic military science course [MILS 111, 112, 201 or 202].)

MILS 111 2 Credits Fall
U.S. Army and Society I (2+0)
Origin, development, organization and function of the American military. 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 includes characteristics of officers and their relation to subordinates.

MILS 112 2 Credits Spring
U.S. Army and Society II (2+0)
Survey of human behavior and leadership in the army and military environment. Role of the soldier, military training, discipline, ethics, and professionalism presented. Introduction 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. Exercises in orienteering complement academic instruction.

MILS 201 2 Credits Fall
U.S. Defense and World Affairs (2+0) s
Effect of current world events on the military leader and defense structure. Relationship of historical and political events to the decision- making processes. Socio-political influence on military thought of the effect of geography on the economic base of a nation. Current military strengths and weaknesses of power groups.

MILS 202 2 Credits Spring
Communications Arts for the Military Leader (2+0)
Principles of public speaking and instructional techniques. Emphasis on development of functional skills through rehearsed and unrehearsed presentations. Use of audio-visual aids. Intensive practice in developing lesson plans and skill in presentation.

MILS 250 3 Credits Summer
Basic Camp
A six- week camp in basic military skills and leadership experience in preparation for entrance into the advanced course. For students who did not take the basic course. (Prerequisite: At least two years of schooling remaining upon completion of camp. Admission by arrangement with professor of military science.)

MILS 100 1 Credit Fall
MILS 200 1 Credit Spring
Outdoor Skills Laboratory (0+2)
Advanced training in orienteering, marksmanship, arctic survival, skiing and snowshoeing. Students assist in instruction and in organizing and managing the lab. 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)
Concepts, principles, and techniques applicable to the doctrine of tactical operations. Emphasizes role of small unit leader in managing individuals and small units in offensive, defensive, and specialized combat operations. Practical application of performance objectives and the integration of support functions emphasized. Laboratory in leadership development. (Prerequisite: Junior standing in MILS or permission of instructor.)

MILS 303 3 Credits Fall
Advanced Leadership (3+1)
(Same as BA 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 MILS 350. (Prerequisite: Junior standing in MILS or permission of instructor.)

MILS 350 3 Credits Fall
Advanced Camp
Six- week camp structured as a leadership workshop allowing students to utilize leadership skills in a variety of situations in a military environment. (Prerequisites: Must be enrolled as an advanced course cadet and have completed MILS III.)

MILS 351 2 Credits Fall
Cadet Troop Leadership Training
Three-to-five-week full-time leadership training and development, serving in leadership positions with the active Army. Application of leadership and management principles in real life junior officer situations/positions. (Prerequisites: Must be enrolled as an advanced course cadet and completed MILS III and MILS 350.)

MILS 401 3 Credits Fall
Seminar on Tactical Operations (3+1) s
A study of tactical operations from the time of Hannibal to the present. Introduces a variety of historical examples where application or violation of sound tactical principles, or various styles and types of leadership, have produced success or failure. (Prerequisite: Senior standing in MILS or permission of instructor.)

MILS 402 3 Credits Spring
Seminar in Leadership and Management (3+0)
Overview of management principles and practices, and military justice. Orientation on various military administrative, training, logistical, and maintenance tools. Class includes preparation for commissioning. (Prerequisite: Senior standing in MILS or permission of instructor.)

Mineral Preparation Engineering

MPR 601 3 Credits Fall
Froth Flotation (2+3)

MPR 606 3 Credits Spring
Plant Design (1+6)

MPR 611 3 Credits Alternate Fall
Hydrometallurgy (3+0)

MPR 612 3 Credits Alternate Fall
Solution Concentration and Purification (3+0)

MPR 684 3 Credits Spring
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). Importance of the natural conditions and production level in the equipment selection procedure emphasized. (Prerequisites: ES 208, 307, 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 304 3 Credits Alternate Fall
Introduction to Metallurgy (3+0)
Overview of the extractive metallurgy of gold, silver, and platinum group metals; from gravity concentration to cyanidation and smelting. (Prerequisites: CHEM 211, PHYS 212. Next offered: 1991-92.)

MIN 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: 1991-92.)

MIN 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 developed. (Prerequisite: MIN 313. Next offered: 1991-92.)

MIN 370 3 Credits Spring
Rock Mechanics (2+3)
Physical and mechanical properties of rock; rock mass classification systems; 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 student's option, or equivalent. To be taken 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: 1991-92)

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 301 or 451.)

MIN 410 3 Credits Alternate Fall
Surface Materials Handling Systems (2+3)
The techniques and design of systems to load and transport ore, concentrates, and waste materials in mining and milling operations. (Prerequisite: Senior standing or permission of the instructor. Next offered: 1991-92.)

MIN 415 3 Credits Alternate Fall
Coal Preparation (2+3)
Unit operations, flowsheets, washability characteristics, and control by sink-float methods for coal preparation plants. Market requirements and economics of preparation. (Prerequisite: MIN 313. Next offered: 1991-92.)

MIN 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.)

MIN 418A — Theory and application of emission spectrography: two one-hour classes and one three-hour lab per week for five weeks. One credit.

MIN 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.

MIN 418C — Theory and application of atomic absorption spectrophotometry: two one-hour classes and one three-hour lab per week for five weeks. One credit.

MIN 433 3 Credits **Alternate Fall**
Mining Access, Safety and Environmental Law
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: 1991-92.)

MIN 443 3 Credits **Fall**
Rock Fragmentation (3+0)
Selection and design of modern mining rock breaking and 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. (Prerequisite: 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 covered. (Prerequisites: MIN 301, 302, and 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**
Ground Control (3+0)
Stability and design for ground control of surface and underground mining excavations; reinforcement and monitoring systems for openings constructed in rock mass. Construction in swelling rock and frozen ground, underground hazards (bursts and water inflow), monitoring of deformation and stresses associated with the opening's presence. (Prerequisites: MIN 370, 443. Next offered: 1991-92.)

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, 445, 446, and 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**
Advanced Rock Mechanics (2+3)

MIN 674 3 Credits **Alternate Spring**
Advanced Ground Control (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)
Origin, structure and development of museums, types of museums and their functions, professional directions and ethics. Collection management systems and techniques, role and ethics of museum conservation. (Prerequisite: Sophomore standing or permission of the instructor. Next offered: 1992-93.)

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, museum management, administrative frameworks, legal considerations, and financial management. (Prerequisite: MSM 211. Next offered: 1992-93.)

MSM 311 3 Credits **Alternate Fall**
Museum Administration (3+0)
Administrative philosophy and procedures in public and private, large and small museums; the types and sources of support and interactions with local and national supportive groups. (Prerequisites: MSM 211 and 212 or permission of the instructor. Next offered: 1991-92.)

MSM 312 3 Credits **Alternate Spring**
Museum Collection Management (3+0)
Basic curatorial techniques and problems. Field collecting and other forms of acquisition through accessioning, cataloging, preparation, exhibit, teaching, and research. (Prerequisites: MSM 211 and 212 or permission of the instructor. Next offered: 1991-92.)

MSM 487 3 Credits **As Demand Warrants**
Museum Practicum
Supervised participation in one or more phases of museum operations or disciplines. (Prerequisites: MSM 211 and 212 and permission of the instructor.)

MSM 488 3 Credits **As Demand Warrants**
Individual Research: Field Collecting Museum Specimens
Philosophies, purposes and goals of field collection, procedures for collecting museum specimens, and methods of handling before they reach 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

APPLIED MUSIC

MUS 161, 162 2 or 4 Credits **Fall, Spring**
MUS 261, 262 2 or 4 Credits **Fall, Spring**
MUS 361, 362 2 or 4 Credits **Fall, Spring**
MUS 461, 462 2 or 4 Credits **Fall, Spring**
Private Lessons 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. See accompanying box for private lesson fees. (Prerequisite: Admission by audition. Course may not be audited. Credit-No Credit grading not permitted.)

MUS 190 0 Credit **Fall, Spring**
Recital Attendance (1+0)
Recital and concert attendance.

MUS 390 0 Credit **Fall, 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, 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, Spring**
Advanced Private Lessons
Private instruction as arranged. See accompanying box for private lesson fees.

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 ENSEMBLES AND CLASS LESSONS

MUS 101 1 Credit **Fall, Spring**
Choral Society (0+3) h

MUS 151 1 Credit **Fall, Spring**
Class Lesson (0+3) h
Class instruction in piano, voice, orchestral instrument, or guitar. See accompnaying box for class lesson fees. (MUS 151 may be repeated for credit. Course may not be audited.)

MUS 153 1 Credit **Fall, Spring**
Functional Piano (1+0) h
Laboratory instruction to help music majors obtain performance, sight-reading, and harmonization-transposition skills needed to pass the Piano Proficiency Examination. It also provides non-music majors an opportunity to study basic piano skills on a space-available basis. See accompanying box for class lesson fees. (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, Spring**
Orchestra (0+3) h
(Admission by audition.)

MUS 205 1 Credit **Fall, Spring**
Concert Band (0+3) h
(Admission by audition.)

MUS 211 1 Credit **Fall, Spring**
"Choir of the North" (0+3) h
(Admission by audition.)

MUS 253 0 Credit **Fall, Spring**
Piano Proficiency (0+1)
Final phase of completion of piano proficiency examination. (Prerequisites: MUS 153 and permission of instructor.)

MUS 307 1 Credit **Fall, 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, Spring**
Opera Workshop (0+3, 6 or 9) h

MUS 317 1 Credit **Fall, 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)

MUSIC THEORY, MUSIC HISTORY AND MUSIC EDUCATION

MUS 103 3 Credits **Fall, 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. Also available via Independent Learning.

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. Examines 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: For MUS 131, concurrent enrollment in 133; For MUS 132, 134 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 of programmed materials in a laboratory situation in addition to classroom instruction. (Prerequisite: Concurrent enrollment in MUS 131 or 132 unless exempted by music theory placement examination.

MUS 200X 3 Credits **Fall, Spring**
Aesthetic Appreciation: Interrelation of Art, Drama, and Music (3+0) h
(Same as ART 200X and THR 200X)
Understanding and appreciation of art, drama, and music through an exploration of their relationship. Topics include the creative process, structure, cultural application and diversity, the role of the artist in society, and popular movements and trends.

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. (Prerequisites: MUS 131 and 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 is devoted to study and synthesis of 20th century stylistic and harmonic idioms. (Prerequisites: Concurrent enrollment in MUS 233 for 231 and 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 and 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, Spring**
Music Methods and Techniques (1+2)
Instruction in voice and the basic instruments of band and orchestra. Emphasis on teaching methods. Course may be repeated 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: 1991-92.)

MUS 351O 3 Credits Fall
Conducting (3+0) h
Principles of conducting; interpretation of vocal and instrumental ensemble music. (Prerequisite: MUS 232.)

MUS 405W 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 use of teaching plans in classroom and rehearsal settings. (Prerequisite: Permission of instructor. Should be taken prior to ED 453.)

MUS 421W 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: 1991-92.)

MUS 422W 3 Credits Alternate Spring
Music in the Seventeenth and Eighteenth Centuries (3+0) h
Style and performance practices of 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. 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: 1991-92.)

MUS 423W 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: 1991-92.)

MUS 424W 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: 1991-92.)

MUS 432 3 Credits Alternate Fall
Orchestration and Arranging (3+0) h
Instrumentation and arranging for vocal and instrumental ensembles. (Next offered: 1991-92.)

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: 1991-92.)

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: 1992-93.)

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, Spring
Graduate Recital

Natural Resources Management

NRM 101 3 Credits Fall
Natural Resources Conservation and Policy (3+0)
Concepts, management practices and issues/concerns associated with the conservation of natural resources; natural and social science aspects of resource conservation and policy; resource commentaries and discussion sessions provide opportunities for developing a personal philosophy related to natural resources. Majors in all fields welcome. (Prerequisite: Placement in ENGL 111.)

NRM 102 1-3 credits Fall, Spring
Practicum in Natural Resources Management
Practical experience in natural resources management. Supervised individual study on a farm, in a greenhouse, managed forest, agency or business, or another approved location. (Prerequisite: Natural Resource Management majors only.)

NRM 201 3 Credits Fall
Processes of Natural Resources Management (3+0)
Institutions and processes of management, public and private agencies and native regional corporations. (Prerequisites: NRM 101 and sophomore standing.)

NRM 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: 1991-92.)

NRM 220 3 credits Spring
Elements of Information Transfer for Natural Resource Managers (3+0)
Information transfer methods, including the extension process. Identification of, and networking with various publics. Tools, techniques, and planning strategies for effective information transfer. (Prerequisites: NRM 101 and a speech communications course or permission of instructor.)

NRM 231 3 Credits As Demand Warrants
Arctic Survival (3+0)
(Same as AVTY 231)
Use of principles, procedures, techniques and equipment to survive extreme arctic conditions and to assist in safe recovery. Lab required. Materials fee: $35.00.

NRM 235 3 Credits As Demand Warrants
Elements of Weather (3+0)
(Same as AVTY 235)
Weather as it affects aircraft operators with an emphasis on Interior Alaska.

NRM 241 3 credits Spring
Introduction to Geographic Information Systems (2+3)
(Same as GEOG 241)
Review of hardware and software components, exploration of several applications and introduction to data structures and basic functions. Several different GIS systems considered. (Prerequisite: Knowledge of PC's or unix workstations desirable.)

NRM 251 4 credits Spring
Silvics and Dendrology (3+3)
Addresses 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 for identification on sight or with a key. Field trips required. Laboratory fee: $10.00. (Prerequisites: BIOL 105, 106 and 271 or permission of instructor.)

NRM 277 3 Credits Alternate Spring
(Same as BIOL 277)
Introduction to Conservation Biology (3+0)
Introduction to the basic ecological, genetic, management, legal, and historical developments in conservation biology and focused efforts to manage biological diversity resources, with a status review of important habitats and endangered species. (Prerequisites: Biol 105, 106. Next offered: 1991-92.)

NRM 300 1-6 Credits Fall, Spring, Summer
Internship in Natural Resources Management
Supervised pre-professional experience in a business or agency (public or private). Open to students majoring or minoring in natrual resources management only. Course may be repeated for credit up to a maximum of 6 credits. (Prerequisites: NRM 101, junior standing, 3.0 gpa, permission of instructor, and an approved internship plan.)

NRM 301OW 3 Credits Fall
(Same as AVTY 301)
Air Worker Strategies (3+0)
Knowledge and skills to use general aviation aircraft as a tool for field transportation, field logistics or as a platform for instrumentation and data collection. For pilots or air workers who use aviation in natural resources managment. (Prerequisite: AVTY 101 or 111.)

NRM 302 2 Credits Spring
Aerial Data Collection (2+0)
(Same as AVTY 302)
Uses of aircraft to collect resource data. Ocular observations through operation of remote sensing data equipment. Mission design and sampling strategies. (Prerequisite: AVTY 301.)

NRM 302L 1 Credit Spring
Aerial Data Collection Laboratory (0+2)
(Same as AVTY 302L)
Lab portion of NRM 302. (Prerequisites: AVTY 301, 302.)

NRM 305 3 Credits Alternate Fall
Nutrition for Children, Adolescents and Adults (3+0)
Application of basic nutrition principles to health and well-being of children, adolescents and adults including nutritional and related health problems found among Alaskans. (Prerequisite: BIOL 105 or CHEM 105 or equivalent, or permission of instructor. Next offered: 1991-92.)

NRM 310O 3 Credits Spring
Agricultural Concepts (3+0)
Concepts and techniques of agriculture in its broadest sense: history of food and fiber in world cultures, agricultural policy, symbiosis with natural ecosystems, food and fiber production techniques, agribusiness principals and world markets. Group projects stress analyses of food and fiber production and markets within U.S. policy constraints. (Prerequisite: BIOL 105, 106.)

NRM 312 3 Credits Alternate Fall
Introduction to Range Management (3+0)
Applied ecological treatment of soil, plant and grazing animal relationships on uncultivated lands. Origin of the discipline, management practices, important rangelands of North America; emphasis on Alaska's rangelands and grazers. (Prerequisites: BIOL 105, 106, BOT 239 or permission of instructor; NRM 320, 321 recommended. Next offered: 1992-93.)

NRM 313 4 Credits Alternate Spring
Introduction to Plant Pathology (3+3)
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, 106; BOT 239 recommended. Next offered: 1992-93.)

NRM 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. Management and production systems with special reference to Alaska. (Prerequisite: A course in general biology. Next offered: 1992-93.)

NRM 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: 1991-92.)

NRM 340 3 Credits Spring
Natural Resources Measurements (2+3)
Techniques and instrumentations used to measure and inventory natural resources, including land, timber, range, wildlife, water, and recreation resources. (Prerequisite: Junior standing or permission of instructor.

NRM 341 4 Credits Fall
Techniques in Geographic Information Systems (3+3)
(Same as GEOG 341)
GIS algorithms, data structures, advanced computational topics and analysis of error. Examination of ways traditional planning and management theories and techniques can be implemented in GIS's. (Prerequisite: NRM 241.)

NRM 360 3 Credits Alternate Spring
Outdoor Recreation Planning (3+0)
Allocations of natural resources for recreational purposes, including concomitant services. Macrobehavioral patterns influencing the allocation process. (Prerequisites: NRM 101 and ECON 235 or equivalent, or permission of instructor. Next offered: 1991-92.)

NRM 370 3 Credits Fall
Introduction to Watershed Management (2+3)
The hydrologic cycle and the influence of land management techniques on water quantity, quality, and timing. Water yield, soil erosion and non-point pollution, snowpack management, and land use alternatives. (Prerequisites: NRM 101 and GEOS 101 or permission of instructor.)

NRM 380 3 Credits Spring
Soils (2+3)
Soil development and classification; physical and chemical properties; biological activity; water movement and nutrient cycling in natural and manipulated ecosystems. (Prerequisite: CHEM 105.)

NRM 400 3 Credits Alternate Spring
Natural Resource Policies (3+0)
Origin and significance of public policies in land, water, forest, wildlife, mineral, petroleum, agricultural and aesthetic resources. Focuses on Alaskan and relevant national issues. (Prerequisite: Upper division or graduate standing. Next offered: 1991-92.)

NRM 401 3 Credits Alternate Spring
Natural Resources Legislation (3+0)
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: 1992-93.)

NRM 402 3 Credits Spring
Aircraft Managment (3+0)
(Same as AVTY 402)
Securing, dispatching, and monitoring aircraft operations. Safety, security, community relations, cost-effective scheduling and personnel management for mission scheduling. (Prerequisite: AVTY 301.)

NRM 403 4 Credits Alternate Spring
Managing Food Production Systems (3+3)
Principles of the firm applied to development of a diversified plan for food production. Budget and cash flows, using a personal computer. (Prerequisites: NRM 310, 320, basic economics [can be taken concurrently], and basic knowledge of operation of a personal computer, or permission of instructor. Next offered: 1991-92.)

NRM 411 3 Credits Alternate Fall
Plant Propagation (2+3)
Plant propagation, including seeds, bulbs, divisions, layers, cuttings, buds, grafts, and rootstocks. Where possible, emphasis will be placed on the propagation of indigenous plants. (Prerequisite: NRM 211 or permission of instructor. Next offered: 1992-93.)

NRM 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. (Prerequisite: NRM 211. Next offered: 1992-93.)

NRM 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)

NRM 425 2 Credits Spring
Alaska's Reindeer Industry (2+0)
Social, economic, historical, and ecological aspects of the industry. Emphasis on the multi-disciplinary nature of natural resource management and planning, and coordination of agency and private involvement. (Prerequisites: NRM 101, junior standing or permission of instructor.)

NRM 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. (Prerequisite: Upper division standing.)

NRM 450 3 Credits Alternate Fall
Forest Management (3+0)
Forest land management for production of goods and services; relation of timber production to other forest land uses. Sustained yield, allowable cut, information needs, valuation, decision making. (Prerequisites: NRM 251, 340, ECON 235 (or equivalent), or permission of instructor. Next offered: 1992-93.)

NRM 451W 3 credits Alternate Spring
Silviculture (2+3)
Examines biological, environmental, and silvicultural considerations essential for successful regeneration and maintenance of boreal and western North American forests. For persons in land management, including timber, woodlot, wildfire habitat, streamside, aesthetics. Provides intense look at science and art of forest stand management. Involves considerable critical writing. Field trips required. (Prerequisites: NRM 251, BIOL 271, junior standing or permission of the instructor. Next offered: 1992-93.)

NRM 452 3 Credits Alternate Spring
Forest Protection (3+0)
Principles and practical management systems for protection from fire, insects, and diseases. Factors in managing forest ecosystems, problems and techniques important in high latitude forests, especially in Alaska. (Prerequisites: BIOL 105, 106, 271, BOT 239; NRM 251 or instructor's permission. Next offered: 1991-92.)

NRM 453 3 Credits Alternate Fall
Harvesting and Utilization of Forest Products (3+0)
Manual and mechanized timber harvesting systems including timber cutting, yarding, and transport processes. Technology of processing wood into various products including lumber, plywood, veneer, pulp, and energy. (Prerequisites: NRM 101 and 251 or permission of instructor. Next offered: 1992-93.)

NRM 460W 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: Junior standing or permission of the instructor.)

NRM 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. (Prerequisite: Junior standing or permission of instructor. Next offered: 1992-93.)

NRM 462 3 Credits Fall
Alaskan Environmental Education (3+0)
(Same as ED 462)
Utilization of the environment inside and outside the formal classroom in all subject areas. Curriculum materials (K-12), interpretive and audiovisual aids, problem solving, and applications to situations from the public schools to summer camps, short courses, and workshops for individuals of any age. (Prerequisite: Junior standing or permission of instructor.)

NRM 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. (Prerequisite: NRM 380. Next offered: 1991-92).

NRM 485 3 Credits Alternate Spring
Soil Biology (3+0) n
Major groups of organisms in the soil and their interrelationships; the major biological processes which take place in the soil and their significance to soil productivity, plant growth, and environmental quality; and methodology for studying soil organisms and soil biological processes. (Prerequisites: A course in biology or microbiology and a course in soils or permission of instructor. Next offered: 1991-92.)

NRM 607 3 Credits Alternate Spring
Biotechnology (3+0)
(Same as EQE 607)

NRM 630 3 Credits Fall
Planning Theory (3+0)

NRM 631 3 Credits Spring
Planning Practicum (3+0)

NRM 640 3 Credits Alternate Spring
Simulation and Modeling in Resource Management (3+0)

NRM 641 3 Credits Alternate Spring
Natural Resources Applications of Remote Sensing (2+3)

NRM 670 3 Credits Alternate Fall
Biometeorology (3+0)

NRM 672 2 Credits Alternate Fall
Dynamics of Nitrogen in Forest Ecosystems (2+0)

NRM 675 3 Credits Alternate Fall
Applied Ecosystem Science (3+0)

NRM 680 3 Credits Alternate Fall
Environmental Decision-Making (3+0)

NRM 681 3 Credits Alternate Spring
Natural Protection and Management (3+0)

NRM 690 3 Credits Alternate Fall
Advanced Topics in Resource Management (3+0)

Northern Studies

For information on studying at McGill University, Montreal, Canada; the University of Copenhagen, Denmark; or opportunities for study in the U.S.S.R., see Study Abroad.

NORS 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: 1991-92.)

NORS 600 3 Credits Fall
Perspectives on the North (3+0)
(Same as HIST 600)

NORS 601 3 Credits Fall
Research Methods and Sources in the North (3+0)

NORS 610 3 Credits Alternate Fall
Northern Indigenous Peoples and Contemporary Issues (3+0)
(Same as ANTH 610)

NORS 614 3 Credits Alternate Spring
Human Adaptation to the Circumpolar North (3+0)
(Same as PSY 614)

NORS 620 3 Credits Alternate Fall
Images of the North (3+0)
(Same as ENGL 620)

NORS 630 3 Credits Spring
Economic Issues of the Circumpolar North (3+0)
(Same as ECON 630)

NORS 637 3 Credits Alternate Fall
Geography of Northern Development (3+0)
(Same as GEOG 637)

NORS 650 3 Credits Alternate Spring
Comparative Government and Politics in the Circumpolar North (3+0)
(Same as PS 650)

NORS 651 3 Credits Alternate Fall
Justice and Social Control in the Circumpolar North (3+0)
(Same as JUST 651)

NORS 652 3 Credits Alternate Spring
International Relations of the North (3+0)
(Same as PS 652)

NORS 690 3 Credits Alternate Spring
Researching and Writing Public Northern History (1+3)
(Same as HIST 690)

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. Open lab.

OP 073 1 Credit As Demand Warrants
Spelling and Vocabulary (1+0)
Skill development in spelling correctly and using general and specialized terms in business. Open lab.

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. Materials fee: $10.00.

OP 082 1 Credit As Demand Warrants
Clerical Accounting I (1+0)
Acquaints student with the relationship between accounting and business, steps of the accounting cycle, and principles and procedures involved in handling cash. Open lab.

OP 083 1 Credit As Demand Warrants
Clerical Accounting II (1+0)
Overview of accounting systems. Topics include use of journals and subsidiary ledgers, preparation of financial statements and end-of-the-period procedures. (Prerequisite: OP 082.)

OP 086 1 Credit As Demand Warrants
Reception Skills (1+0)
Training and practice in office receptionist skills. For persons seeking an entry level position. 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)
Instruction and practice in 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. (Prerequisites: 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 in the Office Professions lab. Materials fee: $10.00.

OP 104 1 Credit As Demand Warrants
Typing Skill Building (1+0)
Supervised training to improve speed and/or accuracy on straight and numerical copy. May be repeated up to 3 credits. Materials fee: $5.00. (Prerequisite: OP 103 or permission of instructor.)

OP 105 3 Credits As Demand Warrants
Keyboarding II/Intermediate Typewriting (3+0)
Instruction and training to attain at least minimal typing skill, experience and knowledge necessary for typist beginning an office career. Lab arranged. Materials fee: $5.00. (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)
Training and practice to achieve level of typing skill, experience, knowledge and production output required in business office positions. Lab arranged. Materials fee: $10.00. (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 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. Open lab.

OP 110 3 Credits As Demand Warrants
Office Procedures (3+0)
Duties and responsibilities of general office employees including filing, processing 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)
Basic procedures in typing documents on a 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. Materials fee: $10.00. (Prerequisite: OP 103 or permission of instructor. Should type 35 wpm prior to entry.)

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 Word Processing/WordPerfect (2+0)
Provides practice on an IBM compatible microcomputer using Wordperfect software to create, edit, and store documents as well as perform more advanced applications. Materials fee: $10.00. (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 Displaywrite 4 software to create, edit and store documents as well as perform more advanced applications. Materials fee: $10.00. (Prerequisite: Keyboard speed of 35 wpm.)

OP 153 2 Credits Fall, Spring
Microsoft Word (2+0)
A beginning course in a powerful and versatile word processor for the IBM. (Prerequisite: OP 103 or equivalent.)

OP 154 1 Credit As Demand Warrants
Advanced Applications-Wordperfect (1+0)
Provides instruction and practice in the use of macros, merging, headers/footers, advanced document formatting and manipulation, tables, math function, indexing, and other features specific to the Wordperfect software program. Materials fee: $5.00.

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. Materials fee: $10.00.

OP 201 3 Credits As Demand Warrants
Shorthand III-Speed Dictation and Transcription (3+0)
Methods of strengthening typing and shorthand skills to improve speed and accuracy of transcription and to develop a high degree of shorthand skills. (Prerequisite: OP 102, 105 or demonstration of equivalent proficiency.)

OP 203 2 Credits As Demand Warrants
Calculating Machines (2+0)
Provides basic operating knowledge of the electronic calculator for such applications as discounting, amount and percent of change, prorating interest, commissions and payroll. Development of proficiency in 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. Materials fee: $5.00. (Prerequisite: OP 105 or permission of instructor.)

OP 210 3 Credits As Demand Warrants
Legal Typewriting (3+0)
Provides legal procedures background and skill improvement in typewriting and transcription. Emphasis on understanding legal processes as well as developing expertise in typewriting and office procedures. Materials fee: $5.00. (Prerequisite: OP 105 or permission of instructor.)

OP 211 2 Credits As Demand Warrants
Medical Typing (2+0)
Provides training for employment as an office worker, particularly as a forms typist, in a hospital or medical bureau or office or toward qualifications as a medical assistant or secretary. (Prerequisite: OP 105 or demonstration of equivalent proficiencies.)

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 in formatting medical papers including a Medicare form, an admission form, a dental report; preparing patient histories, medical reports, file cards and other medical documents. Practice in transcribing from machine dictation and in using medical terminology correctly. Materials fee: $5.00. (Prerequisite: OP 105 and 207.)

OP 219 1 Credit As Demand Warrants
Legal Machine Transcription (1+0)
Instruction and practice in formatting legal papers including a lease, bill of sale, subpoena, stipulations, interrogatories, notices and various types of orders. Transcription from machine dictation; using the language of the law correctly. Materials fee: $5.00.

OP 221 3 Credits As Demand Warrants
Filing/Records Management (3+0)
Instruction in basic alphabetic 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, microrecords); 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 offered in six areas covered by the exam: behavioral science in business, business law, economics and management, accounting, office administration and office technology. One credit is granted for any combination of three of the above review topic areas. Materials fee: $5.00.

OP 228 1 Credit As Demand Warrants
Wordprocessing/Reportpack (1+0)
The Reportpack Feature is used to create, maintain and print files. For operators using the IBM Displaywriter System. Materials fee: $10.00. (Prerequisite: OP 128 or permission of instructor.)

OP 231 3 Credits As Demand Warrants
Business Communications (3+0)
Composition and evaluation of various kinds of common communications between a business person and associates, customers and dealers. Included are inter-office memos, letters, reports and oral communications. (Prerequisite: OP 131 or permission of instructor.)

OP 244 3 Credits As Demand Warrants
Office Management (3+0)
Review of procedures, basic attitudes and skills required of a secretary. 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. (Prerequisites: Permission of instructor and 12 credits in OP 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)
Thermodynamics 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. (Prerequisites: 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, 341.)

PETE 431 2 Credits Fall
Natural Gas Engineering (2+0)
Natural gas production 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)
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, 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, 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 systems of the major philosophical traditions of the Far East. (Prerequisite: PHIL 201 or permission of the instructor.)

PHIL 204 3 Credits Fall, Spring
Introduction to Logic (3+0) h
Principles of deductive and inductive logic and application of these principles to critical thinking in science and other fields; brief introduction to symbolic logic and its application. (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: 1991-92.)

PHIL 322X 3 Credits Spring
Ethics (3+0) h
Examination of ethical theories and basic issues in moral thought. (Prerequisite: PHIL 201. Next offered: 1991-92.)

PHIL 341O 3 Credits Alternate Fall
Epistemology (3+0) h
The nature of knowledge, truth and certainty. (Prerequisite: PHIL 201. Next offered: 1991-92.)

PHIL 342 3 Credits Alternate Spring
Metaphysics (3+0) h
Theories of reality and their relationship to science, philosophy and religion. (Prerequisite: PHIL 201. Next offered: 1991-92.)

PHIL 351 3 Credits Fall
History of Philosophy and Science (3+0) h
Ancient and medieval periods. (Prerequisite: Six credits in philosophy and/or natural and 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 and/or natural and social science.)

PHIL 381 3 Credits As Demand Warrants
Topics in Logics (3+0) h
An advanced explanation of problems, philosophies and approaches in logics, including classical, symbolic and comparative logics. (Prerequisites: Completion of PHIL 204 or its equivalent and permission of the instructor.)

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: 1991-92.)

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: 1991-92.)

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: 1991-92.)

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: 1991-92.)

PHIL 485 3 Credits As Demand Warrants
Topics in Comparative Philosophies (3+0) h
Explores, on an advanced level, modern and traditional philosophical questions, problems, and approaches to and within different cultural settings. Student should have at least an aquaintance with a second language and some multicultural experience. (Prerequisite: Nine credits in philosophy.)

PHIL 486 3 Credits As Demand Warrants
B.A. Thesis in Philosophy (1+2+var) h
Independent research on a topic demonstrating both student's ability to philosophically analyze as well as ability to do cultural and historial research. (Prerequisite: Completion of all major requirements in philosophy.)

Physical Education

PER 100-199 1 Credit Fall, Spring
Physical Activities and Instruction (0+3)
Instruction, practice, and activity in a variety of physical activities, sports, and dance in separate sections. Courses may be taken for credit one time only. Laboratory fees as indicated
PER 101 — Multifitness Conditioning
PER 102 — Running for Fitness
PER 103 — Cycling for Fitness
PER 104 — Walking for Fitness
PER 105 — Weight Training for Fitness
PER 106 — Aerobics
PER 107 — Low Impact Aerobics
PER 108 — Power Lifting
PER 109 — Beginning Ice Skating
PER 110 — Intermediate Ice Skating
PER 111 — Ice Skating for Conditioning
PER 112 — Beginning Ice Dancing
PER 113 — Intermediate Ice Dancing
PER 114 — Advanced Ice Dancing
PER 115 — Beginning Ice Hockey
PER 116 — Intermediate Ice Hockey
PER 117 — Speed Skating
PER 118 — Curling
PER 119 — Beginning Swimming
PER 120 — Intermediate Swimming
PER 121 — Advanced Swimming
PER 122 — Conditioning Swimming
PER 123 — Aqua Aerobics
PER 124 — Water Polo
PER 125 — Springboard Diving
PER 126 — Synchronized Swimming
PER 127 — Beginning Fencing
PER 128 — Intermediate Fencing
PER 129 — Advanced Fencing
PER 130 — Beginning Aikido
PER 131 — Intermediate Aikido
PER 132 — Advanced Aikido
PER 133 — Beginning Tae Kwon Do
PER 134 — Intermediate Tae Kwon Do
PER 135 — Advanced Tae Kwon Do
PER 136 — Beginning Tai Chi Chuan
PER 137 — Intermediate Tai Chi Chuan
PER 138 — Advanced Tai Chi Chuan
PER 139 — Beginning Yoga
PER 140 — Intermediate Yoga
PER 141 — Advanced Yoga
PER 142 — Beginning Karate
PER 143 — Intermediate Karate
PER 144 — Advanced Karate
PER 145 — Basketball
PER 146 — Volleyball
PER 147 — Soccer
PER 148 — Team Handball
PER 149 — Orienteering
PER 150 — Canoeing
PER 151 — Kayaking

PER 152 — Rock Climbing
PER 153 — Mountaineering
PER 154 — Racquetball
PER 155 — Tennis
PER 156 — Table Tennis
PER 157 — Badminton
PER 158 — Billiards
PER 159 — Golf
PER 165 — Beginning Bowling (Lab fee: $35)
PER 166 — Intermediate Bowling (Lab fee: $35)
PER 167 — Advanced Bowling (Lab fee: $35)
PER 168 — Beginning Pistol Marksmanship (Lab fee: $35)
PER 169 — Intermediate Pistol Marksmanship (Lab fee: $35)
PER 170 — Advanced Pistol Marksmanship (Lab fee: $35)
PER 171 — Beginning Rifle Marksmanship (Lab fee: $35)
PER 172 — Intermediate Rifle Marksmanship (Lab fee: $35)
PER 173 — Advanced Rifle Marksmanship (Lab fee: $35)
PER 174 — Beginning Ballet
PER 175 — Intermediate Ballet
PER 176 — Advanced Ballet
PER 177 — Beginning Jazz Dance
PER 178 — Intermediate Jazz Dance
PER 179 — Advanced Jazz Dance
PER 180 — Modern Dance
PER 181 — Ballroom Dance
PER 182 — Western Dance
PER 183 — Folk Dance
PER 184 — Square Dance
PER 187 — Cross-Country Skiing
PER 188 — Downhill Skiing
PER 189 — Ski Mountaineering
PER 190 — Recreational Fitness Activities
PER 199 — Varsity Athletics

PE 205 2 Credits Alternate Fall
Introduction to the Human Movement Sciences (2+0)
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 included. (Next offered: 1992-93.)

PE 208 2 Credits Alternate Fall
Advanced Life Saving (1+3)
Knowledge and skills to provide aid and treatment in aquatic emergencies. Instruction in American Red Cross Cardio-Pulmonary Resuscitation, Advanced Lifesaving, Advanced Swimmer, and Basic First Aid. Certification fee: $5.00 covers American Red Cross Advanced Life Saving Certification. (Prerequisite: Swim Test. Next offered: 1991-92.)

PE 210 1 Credit As Demand Warrants
Water Safety (1+3)
Review and practice of swimming and lifesaving skills. Includes review of courses instructors are eligible to teach, teaching methods relative to those courses, general teaching methods, and practice teaching.

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. (Next offered: 1992-93.) *Meets for 7 weeks.

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. (Next offered: 1992-93.) *Meets for 7 weeks.

PE 213 1 Credit Alternate Spring*
Fundamentals of Ice Sports (1+3)
Basic skills in ice sports for adult and youth groups. Emphasis on developing personal performance skills and safety procedures for effective class management. (Next offered: 1992-93.) *Meets for 7 weeks.

PE 214 1 Credit Alternate Spring*
Fundamentals of Snow Sports (1+3)
Basic skills in snow sports for adult and youth groups. Emphasis on developing personal performance skills and safety procedures for effective class management. (Next offered: 1991-92.) *Meets for 7 weeks.

PE 215 1 Credit Alternate Fall*
Fundamentals of Volleyball (1+3)
Basic skills in volleyball for adult and youth groups. Emphasis on developing personal performance skills and safety procedures for effective class management. (Next offered: 1991-92.) *Meets for 7 weeks.

PE 216 1 Credit Alternate Fall*
Fundamentals of Rhythms (1+3)
Basic skills in rhythms for adult and youth groups. Emphasis on developing personal performance skills and safety procedures for effective class management. (Next offered: 1992-93.) *Meets for 7 weeks.

PE 217 1 Credit Alternate Spring*
Fundamentals of Recreational Activities (1+3)
Basic skills in recreational activities for adult and youth groups. Emphasis on developing personal performance skills and safety procedures for effective class management. (Next offered: 1991-92.) *Meets for 7 weeks.

PE 218 1 Credit Alternate Fall*
Fundamentals of Soccer (1+3)
Basic skills in soccer for adult and youth groups. Emphasis on developing personal performance skills and safety procedures for effective class management. (Next offered: 1991-92.) *Meets for 7 weeks.

PE 219 1 Credit Alternate Spring*
Fundamentals of Aquatics (1+3)
Basic skills in aquatics for adult and youth groups. Emphasis on developing personal performance skills and safety procedures for effective class management. (Next offered: 1991-92.) *Meets for 7 weeks.

PE 220 1 Credit Every third semester*
Fundamentals of Wrestling (1+3)
Basic skills in wrestling for adult and youth groups. Emphasis on developing personal performance skills and safety procedures for effective class management. (Next offered: 1992-93.) *Meets for 7 weeks.

PE 221 1 Credit Alternate Fall*
Fundamentals of Gymnastics (1+3)
Basic skills in gymnastics for adult and youth groups. Emphasis on developing personal performance skills and safety procedures for effective class management. (Next offered: 1991-92.) *Meets for 7 weeks.

PE 222 1 Credit Alternate Spring*
Fundamentals of Track and Field (1+3)
Basic skills in track and field for adult and youth groups. Emphasis on developing personal performance skills and safety procedures for effective class management. (Next offered: 1992-93.) *Meets for 7 weeks.

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: 1992-93)

PE 246 3 Credits Fall, Spring
Advanced First Aid (3+0)
Knowledge and skills 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 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)
In-depth study of advanced skills, strategies, and analysis in gymnastics. (Prerequisite: PE 221. Next offered: 1991-92.) *Meets for 7 weeks.

PE 302 1 Credit Every third Fall*
Advanced Theory and Techniques for Teaching Basketball (1+3)
In-depth study of advanced skills, strategies, and analysis in basketball. (Prerequisite: PE 212. Next offered: 1993-94.) *Meets for 7 weeks.

PE 303 1 Credit Every third Fall*
Advanced Theory and Techniques for Teaching Ice Sports (1+3)
In-depth study of advanced skills, strategies, and analysis in teaching ice sports. (Prerequisite: PE 213. Next offered 1993-94.) *Meets for 7 weeks.

PE 304 1 Credit Every third Spring*
Advanced Theory and Techniques for Teaching Snow Sports (1+3)
In-depth study of advanced skills, strategies, and analysis in teaching snow sports. (Prerequisite: PE 214. Next offered 1993-94.) *Meets for 7 weeks.

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. (Prerequisite: PE 215. Next offered: 1993-94.) *Meets for 7 weeks.

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 on learning techniques will free people to create from their own movement vocabularies. Some emphasis on correct body alignment and techniques of moving. (Prerequisite: PE 216. Next offered: 1991-92.) *Meets for 7 weeks.

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. One weekend campout required. Laboratory fee: $10.00. (Prerequisite: PE 217. Next offered: 1992-93.) *Meets for 7 weeks.

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. (Prerequisite: PE 222. Next offered: 1993-94.) *Meets for 7 weeks.

PE 309 2 Credits Alternate Spring
Aquatic Instructor (1+3)
Knowledge and skills to teach swimming to children and adults, beginner through advanced swimmer and lifesaving. For American Red Cross Water Safety Instructor Certificate. Certification fee: $5.00. (Prerequisites: Current American Red Cross Lifesaving Certificate and swim test.) Next offered: 1991-92.)

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 include partner and non-partner folk dances, some fad dances and traditional square dance, and practice in cueing and calling. (Prerequisite: PE 216. Next offered: 1993-94.) *Meets for 7 weeks.

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: 1991-92)

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: 1991-92)

PE 321 1 Credit Fall, Spring
Practicum in Physical Education (0+3)
Supervised training as apprentice instructor or leader in university class or within the community. Planning and conducting activities with increasing responsibility. 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)
Sports, games, and fundamental movement activities appropriate for the child in the environment of the home, playground, or elementary school. Course includes progressions in activities and participation in selected activities. For parents, teachers, or others who work with children up to age 12. (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: 1993-94.)

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 strategies and psychology of individual and team play. (Prerequisites: PE 302 and junior standing. Next offered: 1993-94.)

PE 405 2 Credits Alternate Fall
Concepts and Design of Physical Fitness Programs (1½+1½)
Problems, methods of achievement, and maintenance of physical fitness. 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 1991-92)

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: 1991-92.)

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: 1991-92.)

PE 411 3 Credits Alternate Spring
History and Philosophy of Sport and Physical Activity (3+0)
Examines the contributions of physical activity to survival, artistic development, and classic and popular culture as they have influenced the role of physical activity in the United States. (Prerequisite: Junior standing. Next offered 1991-92.)

PE 412 3 Credits Alternate Fall
Principles and Problems in Athletic Coaching (3+0)
Philosophy and objectives of athletic competition at various age levels. Roles and responsibilities of the coach. Problems of athletic coaching and management of athletes and their training. For those who plan to take leadership or coaching roles in school or community athletic programs. (Prerequisite: Junior standing. Next offered: 1992-93.)

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 effects of environmental stressors, especially those specific to northern regions. (Prerequisite: BIOL 111, 112. Next offered: 1992-93.)

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: 1991-92.)

PE 432 4 Credits Alternate Fall
Biomechanics of Human Performance (3+3) n
Mechanical analysis of human movement, focusing internally on musculo-skeletal interactions and externally on the body with the environment. (Prerequisites: BIOL 111, 112, MATH 107. Next offered: 1991-92.)

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 regular programs in physical education and recreation. (Prerequisite: PSY 101 or permission of instructor. Next offered: 1992-93.)

PE 440 3 Credits Every third Spring
Care and Prevention of Athletic Injuries (3+0)
Scientific bases for the care and prevention of sports and physical activity injuries. 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: 1993-94.)

PE 442 3 Credits Alternate Spring
Measurements and Evaluation in Physical Education (3+0)
Evaluation theory and application 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 use of computer programs to calculate statistical values. (Prerequisites: Completion of 8 credits from PE 211 through 222. Next offered: 1992-93.)

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 103X 4 Credits Fall
College Physics (3+3) n
Classical physics including vectors, kinematics, Newton's Laws, momentum, work, energy, rotational motion, oscillations, waves, gravity, fluids, heat, temperature, Laws of Thermodynamics, and kinetic theory. For mathematics, science and liberal arts majors. Laboratory fee: $5.00 (Prerequisites: High school algebra and geometry or instructor permission.)

PHYS 104X 4 Credits Spring
College Physics (3+3) n
Coulomb's Law, electrical potential, capacitance, Kirchoff's Laws, magnetic fields, Faraday's Law, electromagnetic waves, physical and geometrical optics, waves and particles, atomic and nuclear physics. For mathematics, science and liberal arts majors. Laboratory fee: $5.00. (Prerequisite: PHYS 103X or instructor permission.)

PHYS 113 1 Credit Fall
Concepts of Physics (1+0)
Review of experimental and theoretical studies of fundamental interactions of nature leading to major advances in human knowledge. Application of these discoveries to modern technologies, such as solid state electronics, lasers, holography, nuclear fusion, medical diagnostics, remote sensing, etc.

PHYS 211X 4 Credits Fall, Spring
General Physics (3+3) n
Vectors, kinematics, Newton's Laws, momentum, work, energy, rotational motion, oscillations, waves, gravity, and fluids. For engineering, mathematics and physical science majors. Laboratory fee: $5.00. (Prerequisite: Concurrent enrollment in MATH 201 or instructor permission.)

PHYS 212X 4 Credits Fall, Spring
General Physics (3+3) n
Heat, temperature, Laws of Thermodynaics, Coulomb's Law, electrical potential, capacitance, Kirchoff's Laws, Biot-Sarvart Law, Faraday's Law, and electromagnetic waves. For engineering, mathematics and physical science majors. Laboratory fee: $5.00. (Prerequisiste: PHYS 211X or instructor permission.)

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 211X and 212X 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 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 211X and at least concurrent enrollment in MATH 302; PHYS 311 for 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 212X 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 212X 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 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 412, or permission of instructor.)

PHYS 445 4 Credits Spring
Solid State Physics and Physical Electronics (4+0) n
Theory of matter in the solid state and the interaction of matter with particles and waves. (Prerequisites: MATH 302, 314 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, 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 100X 3 Credits Fall, Spring
(Same as ECON 100X)
Political Economy (3+0) s
Survey of the evolution and operation of the American domestic political economy with consideration of market failures and government responses. Review of major issues in political economy such as inflation, poverty and budget deficits. Exploration of linkages between American and global systems.

PS 101 3 Credits Fall, 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. Also available via Independent Learning.

PS 102 3 Credits Fall, 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, Spring
Parliamentary Procedures (1+0)
(Same as ANS 110)
Rules and principles of parliamentary procedures and application to group decision-making processes.

PS 201 3 Credits Fall
Comparative Politics: Western Political Systems (3+0) s
Introductory survey of modern European government and politics. Emphasis on western democracies.

PS 202 3 Credits Spring
Comparative Politics: Non-Western Political Systems (3+0) s
Introductory survey of governments and politics of developing nations in the Third World, including Democratic, Communist, post-Communist, military and other authoritarian regimes.

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. The pattern of Alaska uniqueness, as compared to the contiguous 48 states. Attention 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: 1991-92.)

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: 1992-93.)

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
Origins of Law (3+0) s
(Same as JUST 250)
The historical, social, cultural, intellectual and political origins of the legal system, legal culture and laws of the U.S. Includes discussion of schools of jurisprudence and legal interpretation; development of common and colonial law through constitutional interpretation; role of legal profession; and selected current legal practices and issues.

PS 263 3 Credits Fall, Spring
Alaska Native Politics (3+0) s
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. Compares Alaska Native political developments to those of other circumpolar Northern Native communities.

PS 301 3 Credits Alternate Fall
American Presidency (3+0) s
The institution of the presidency in the American political system. (Prerequisite: PS 101 or consent of instructor. Next offered: 1992-93.)

PS 302 3 Credits Alternate Spring
Congress and Public Policy (3+0) s
The American Congress in the political system. (Prerequisite: PS 101. Next offered: 1991-92.)

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: 1991-92.)

PS 311 3 Credits Alternate Spring
Government and Politics of the Soviet Union and Eastern Europe (3+0) s
Survey of political institutions and processes in the Soviet Union and Eastern European countries. (Prerequisite: PS 201 or instructor permission. Next offered: 1991-92.)

PS 312 3 Credits Alternate Fall
Government and Politics of China and East Asia (3+0) s
Modern East Asia (including China, Japan and Sourtheast Asia) politics and society, including governmental institutions, political processes and regional and global foreign relations. (Prerequisite: PS 201 or consent of instructor. Next offered: 1992-93.)

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: 1992-93.)

PS 321 3 Credits Fall
International Politics (3+0) s
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
Development of international 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: 1992-93.)

PS 325 3 Credits Spring
Native Self- Government (3+0) s
(Same as ANS 325)
Indigenous political systems, customary law and justice in Alaska emphasizing the organization of Native governance, federal Indian Law and Alaska state chartered local government. 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, Justice 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, JUST 110.)

PS 401 3 Credits Alternate Spring
Political Behavior: Organizations (3+0) s
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: 1992-93.)

PS 402 3 Credits Alternate Spring
Political Behavior: Individuals (3+0) s
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: 1992-93.)

PS 403 3 Credits Alternate Spring
Public Policy (3+0) s
Discussion of how policy process works and how policy analysis is conducted. Examples of policy issues from recent cases, especially in Alaska. (Prerequisites: PS 101 and junior standing. Next offered: 1991-92.)

PS 404 3 Credits Spring
Introduction to Legal Research and Writing (3+0)
(Same as JUST 404)
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: 1991-92.)

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: 1991-92.)

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: 1992-93.)

PS 420 3 Credits Alternate Fall
Environmental Politics (3+0) s
Examination of politics of federal environmental policy decisions focusing on the environmental movement as a force reshaping American society. Topics include limits to growth thesis, impact assessment policy, and wilderness politics. (Next offered: 1992-93.)

PS 435 3 Credits Alternate Fall
The Supreme Court and Judicial Process (3+0) s
Role of the Supreme Court and lower Federal courts in the development of American law with emphasis on the influence of organizational, social, political, and economic factors on the behavior of courts. (Prerequisites: PS 101 and 102 or permission of instructor. Next offered: 1992-93.)

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: 1992-93.)

PS 437 3 Credits Alternate Spring
American 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: 1991-92.)

PS 450 3 Credits Alternate Spring
Comparative Aboriginal Rights and Policies (3+0) s
(Same as ANS 450)
A case-study approach in assessing Aboriginal Rights and Policies in different Nation-State Systems. Seven Aboriginal situations examined for factors promoting or limiting self-determination. (Prerequisites: Upper division standing or instructor's permission. Next offered: 1991-92.)

PS 475 3 Credits Fall, Spring
Internship in Public Affairs (3+0)
Individual study of public agencies or organizations through actual experience. (Admission by permission of the 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, including bilateral and multi-lateral negotiations (concerning acid rain and global warming, for example) and negotiations between host states and transnational corporations over management resource exploitation. (Prerequisites: PS 101 or 102 or permission of instructor; PS 321 strongly recommended.)

PS 650 3 Credits Alternate Spring
Comparative Government and Politics in the Circumpolar North (3+0)
(Same as NORS 650)

PS 652 3 Credits Alternate Spring
International Relations of the North (3+0)
(Same as NORS 652)

Psychology

PSY 101 3 Credits Fall, Spring
Introduction to Psychology (3+0) s
Principles of general psychology emphasizing natural science and social science orientation. Cultural, environment, heredity, and psychological basis for integrated behavior; visual, audition and the other senses; motivation and emotion; basic processes in learning, problem solving, and thinking; personality; psychological disorders — their prevention and treatment, and therapeutic strategies. Also available via Independent Learning or via television as a self-paced, computer-aided course; special telecourse fee: $20.00.

PSY 110 1 Credit Fall, 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)
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)
Study and acquisition of counseling techniques centered on development of a helping relationship. Emphasis on communication skills including questioning, responses and leads, non-verbal communication. Other topics include delineation of the counselor role, ethics and confidentiality and referrals. Extensive use of role playing and videotaping.

PSY 210 3 Credits Alternate Spring
Cross-Cultural Psychology (3+0) s
Concepts, premises, and methods of cross-cultural psychology emphasizing its use in testing, extending, and refining Western psychological theories. Topics include perceptions, cognition, social behavior, psychopathology, and social change as they relate to cultural variation. (Prerequisite: PSY 101. Next offered: 1991-92.)

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 techniques and methods for furthering creative potential. (Prerequisite: PSY 101.)

PSY 240 3 Credits Fall, Spring
Developmental Psychology in Cross-Cultural Perspective (3+0) s
Individual development examined from both a psychological and cross-cultural perspective. Development of cognition, personality, and social behavior; attention to relevant research on those cultures found in Alaska. Also available via Independent Learning. (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 cognitive, emotional, social and physical aspects of the young child. Includes child observations. Roles of heredity and environment in the growth process. (Prerequisite: PSY 101 or permission of the instructor.)

PSY 250 3 Credits Fall, Spring
Introductory Statistics for Behavioral Sciences (3+0)
(Same as SOC 250)
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.

PSY 255 3 Credits Fall
Foundations of Counseling I (3+0)
(Same as HMSV 255)
Survey of counseling philosophy, approaches, and types of counseling systems in use. Topics include approach and system match; psychoanalysis, behavior therapy, and humanistic approaches; counseling ethics and ethical problems. (Prerequisites: PSY 101 and 240 or permission of instructor.)

PSY 261 3 Credits As Demand Warrants
Counseling Skills II (3+0)
A continuation of PSY 161 to further development and use of counseling skills. Topics include 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 applied to problems of everyday living and those presented to local human service agencies. Students 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. Sources of stress inside and outside the family system. Concentration on normal, gradual and cumulative life stressors during the life cycle of the family as well as extraordinary stressors which occur suddenly and 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)
Analysis of inter-group relationships in terms of process and value orientation, their influences on the personality, and aspects of collective behavior on group and person. Aspects of social interaction that have cultural and intercultural variation. (Prerequisite: PSY 101 or SOC 101.)

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 emphasizing basic premises, causal factors, functional consequences and interrelationships. Synthesis of animal behavior and ethology in development and maintenance of behavioral patterns in individual organisms and social groups. (Prerequisites: PSY 101, BIOL 105, 106 and/or permission of instructor. Next offered: 1991-92.)

PSY 356 3 Credits Spring
Foundations of Counseling II (3+0)
(Same as HMSV 356)
Continuation of PSY 255. Specific counseling strategies studied in-depth include crisis intervention, individual techniques such as the rational therapies, and specific behavioral approaches. Other topics include role of the counselor in community education and consultation, methods of promoting community change and issues in cross-cultural counseling. (Prerequisites: HMSV 255 or PSY 255.)

PSY 360 3 Credits Alternate Spring
Psychology of Women Across Cultures (3+0) s
Major theories, research and empirical data which describes the psychology of women as a discrete field, philosophical values of feminism and history of women's roles in society. The impact of culture on women interpersonally and intrapsychically examined across cultures. (Prerequisite: PSY 101 or permission of instructor. Next offered: 1991-92.)

PSY 370 3 Credits Alternate Fall
Drugs and Drug Dependence (3+0) s
(Same as SOC 370)
A multidisciplinary approach emphasizing acute and chronic alcoholism, commonly abused drugs, law enforcement and legal aspects of drug abuse, medical uses of drugs, physiological, psychological and sociological aspects of drug abuse, recommended drug education alternatives and plans, and treatment and rehabilitation of acute and chronic drug users. Also available via Independent Learning. (Prerequisite: PSY 101 or SOC 101 or permission of instructor. Next offered: 1992-93.)

PSY 380 3 Credits Alternate Fall
Human Behavior in the Arctic (3+0) s
Living systems in Alaska and behavioral characteristics that have to do with stress and isolation. Material includes structural design as related to behavioral research. (Prerequisite: PSY 101. Next offered: 1991-92.)

PSY 440 3 Credits Alternate Spring
Learning (3+0) s
Theory and research on the fundamentals of learning. Topics 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: 1992-93.)

PSY 445 3 Credits Fall
Community Psychology (3+0) s
(Same as HMSV 445)
Foundations of community psychology including community assessment consultations. Community assessment activities explored include selecting study areas, surveys, evaluation of services, and use of results. During the community consultation portion, education, prevention, and service issues are covered. Attention given to rural and small community assessment and change especially as it applies to Alaska. (Prerequisites: PSY 101, SOC 101, HMSV 201.)

PSY 450 4 Credits Alternate Spring
Experimental Psychology (2+6) s
An integrated approach to the study of experimental psychology. Emphasis on research methodologies and techniques. Design, execution, and analysis of individual projects involving both animal and human subjects. (Prerequisites: PSY 101, PSY 250 or STAT 301, and computer science course(s) strongly recommended and/or permission of instructor. Next offered: 1992-1993.)

PSY 460 4 Credits Alternate Fall
Physiological Psychology (3+3) n
An integrated multidisciplinary approach to the study of neuroanatomy and neurophysiology emphasizing the basic principles, cortical and subcortical organization, functional mechanisms, and the physical-chemical foundations in physiological bases of behavior with special reference to neuroanatomy, neurochemistry, and electrophysiological measures employed in the study of behavior and brain activity. Research topics include 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 and/or permission of instructor. Next offered: 1991-92.)

PSY 470 3 Credits Alternate Spring
Sensation and Perception (3+0) n
An integrated psychophysiological inquiry emphasizing principles, functions and organization, fundamental mechanisms, and the structural complexity extant in the sensory physiology of audition, gustation, kinesthesis, olfaction, proprioception, somesthesis, and vision. Theoretical models and systems of perception with reference to biological, cultural, developmental, hereditary, physiological, psychological, and social effects on sensory perceptions. (Prerequisites: PSY 101, PSY 460, and BIOL 105, 106 or BIOL 111, 112 and/or permission of instructor. Next offered: 1991-92.)

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/SOC 250.)

PSY 610 3 Credits Fall
Alcohol: Pharmacology and Behavior (3+0)

PSY 614 3 Credits Alternate Spring
Human Adaptation to the Circumpolar North (3+0)
(Same as NORS 614)

PSY 615 3 Credits As Demand Warrants
Drug Action: Physiology and Behavior (3+0)

PSY 618 3 Credits As Demand Warrants
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 Fall
Prevention Theories and Strategies (3+0)
(Same as SOC 645)

PSY 646 3 Credits As Demand Warrants
School Counseling (3+3)
(Same as COUN 646)

PSY 650 3 Credits As Demand Warrants
Cross-Cultural Psychopathology (3+0)

PSY 655 3 Credits Alternate Spring
Healing: Implications for Clinical/Community Practice (3+0)

PSY 660 3 Credits Fall
Counseling Theories and Applications (3+0)
(Same as COUN 623)

PSY 661 3 Credits Fall
Cross-Cultural Counseling (3+0)
(Same as COUN 660)

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 Alternate Spring
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 Spring
Group Counseling (3+0)
(Same as COUN 674)

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, Spring
Practicum in Community Psychology (2+7)

PSY 690 3-12 credits Fall, 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 2 Credits As Demand Warrants
Arctic Native Religion: Shamanism (2+0) h
Basic principles and beliefs of Shamanism with emphasis on North American and Arctic Shamanism. Introduction to traditional functions of Shamanism; past and present perceptions of 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) s
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 256 3 Credits As Demand Warrants
Advanced topics in Rural Land Management (1.5+Arr)
Additional experience in practical issues in rural land management through directed readings. Advanced examples in use of public land records, example of local land record systems, and an overview of survey techniques. (Prerequisites: RD 255 and ABUS 223.)

RD 265 3 Credits Fall
Perspectives on Subsistence in Alaska (3+0) s
Examines the socio-economic, cultural, legal and political dimensions of subsistence lifestyles in Alaska.

RD 280 3 Credits As Demand Warrants
Resource Management Research Techniques (3+0)
Overview of standard methods of field-based scientific research conducted by resource management agencies in rural Alaska including elementary statistical concepts, survey techniques, and tools used in land and renewable resources research. (Prerequisites: NRM 101 and BIOL 104X.)

RD 300 3 Credits Fall
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 315 3 Credits Alternate Spring
Tribal People and Development (3+0) s
Comparative examination of socio-economic development processes on tribal peoples in third and fourth world societies. Attention to implications of these processes for Alaska Native people. (Prerequisite: Junior standing or permission of instructor. Next offered: 1991-92.)

RD 325 3 Credits Spring
Community 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)
Examines theory and evidence linking varied forms of education to economic growth and development. A comparative approach explores similarities and differences between rural Alaskan regional development and systematic nation-building efforts in developing countries. (Prerequisite: Permission of instructor.)

RD 350 3 Credits Fall
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 Fall, Spring
Rural Development Internship
Structured experience in an appropriate educational, agency or corporate setting. 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; use of impact data to shape the actual project in positive directions. Data gathering and analysis techniques related to impact predictions. Student impact analysis required. (Prerequisite: RD 350 or permission of instructor.)

RD 450 3 Credits Spring
Managing Community Development 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 475W 3 Credits Fall, Spring
Rural Development Senior Project
Under faculty supervision, the student completes 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

For information on studying in the Soviet Union, see Study Abroad.

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 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.

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 301 3 Credits — Fall
RUSS 302 3 Credits — Spring
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 permission.)

RUSS 431 3 Credits — Fall
Studies in Russian Culture (3+0) h
Study of the cultures of the Russian speaking world. Conducted in Russian. Students may repeat course for credit if topic varies. (Prerequisites: RUSS 301 or equivalent; junior standing or permission of instructor.)

RUSS 432 3 Credits — Spring
Studies of Literature in Russian (3+0) h
Intensive study of authors, literary texts, movements, genres, themes and/or critical approaches. Conducted in Russian. Student may repeat course for credit when topics vary. (Prerequisites: RUSS 302 or equivalent, and at least junior standing, or permission of instructor.)

RUSS 487 3 Credits — Fall
Translation of Russian Texts (3+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 texts. Conducted in Russian. Student may repeat course for credit if materials vary. (Prerequisites: RUSS 302 or equivalent and at least junior standing, or permission of instructor. Next offered: 1991-92.)

RUSS 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 Russian. (Prerequisite: At least 10 credits in upper division Russian or permission of instructor.)

Science Application

Science application courses are not offered on the Fairbanks campus.

SCIA 100 1 Credit — As Demand Warrants
Introducing Astronomy (1+0)
History of astronomy, the structure of the universe and its parts and the techniques used for studying the universe. Observation of celestial bodies with various optical instruments.

SCIA 101 3 Credits — Independent Learning Only
Fundamentals of Petroleum
An overall view of the petroleum industry in terms understandable by the lay person as well as the professional. Included are lessons on petroleum geology, prospecting, leasing, drilling, production, pipelines, refining, processing and marketing. Sponsored by the Alaska Mining and Petroleum Training Service.

SCIA 107 1 Credit — As Demand Warrants
Rock Identification (1+0)
Physical properties of igneous, sedimentary and metamorphic rocks. Sight identification of rocks with emphasis on rocks found on the Seward Peninsula.

SCIA 109 1 Credit — As Demand Warrants
Mineral Identification (1+0)
Physical and field identifiable chemical properties of rocks and minerals. Emphasis on minerals found on the Seward Peninsula.

SCIA 130 1 Credit — As Demand Warrants
Moose Ecology (1+0)
Natural history of moose, the ecological concepts of energy flow, nutrient cycling, food webs and population dynamics. Attention to the Seward Peninsula moose population and factors used in making wildlife management decisions.

SCIA 150 1 Credit — As Demand Warrants
Subarctic Horticulture (0+3)
Soils, plant propagation, disease and insect control, variety selection, fertilization, greenhouse construction and care and gardening techniques. Emphasis on development and care of greenhouses and gardens in the Nome area.

SCIA 161 1 Credit — As Demand Warrants
Birds of Alaska (1+0)
Biology of birds including behavior, anatomy, physiology, ecology, systematics and field identification. Birds of the Seward Peninsula emphasized.

SCIA 230 2 Credits — As Demand Warrants
Biology and Management of King Crab in Norton Sound (1+3)
Anatomy, physiology and ecology of the King Crab. Topics include scientific methodology, field biologist's duties and problems of fishery management. Students work with Alaska Department of Fish and Game biologists in an ongoing study. 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)
Plant anatomy, physiology, genetics, ecology, propagation, insect and disease control, soils, greenhouse construction and care and gardening techniques. Students will develop and conduct a horticultural research project in the Nome area.

Social Work

SWK 103 3 Credits — Fall, Spring
Social Work in the Human Services (3+0)
Introduction to the profession of social work and the human services delivery system. Examines historical development of social work focusing on the knowledge, values, and skills that characterize the social worker. Orientation to the context for social work, including the diversity of human needs, human services, social policy and legislation. 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)
Basic knowledge and skills to develop service plans in human service work and to maintain appropriate case records. Legal and ethical issues in case management 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 influencing development of the current social service system. Analysis of dilemmas which develop in a welfare system attempting to deal with rapid social change. Alternative approaches to the solution of social problems and possible future developments. (Prerequisite: SWK 103.)

SWK 320 3 Credits Spring
Rural Social Work (3+0)
Preparation for practice in rural areas characterized by the need for multiple delivery systems, unique local customs, and inadequate resources. Emphasis on preparation for practice nationally with unique features of Alaska incorporated at key points. (Prerequisites: SWK 103, SOC 101.)

SWK 360 3 Credits Fall
Child Abuse and Neglect (3+0)
Dynamics, implications and treatments of child abuse and neglect for individuals and families in rural and urban Alaska. (Prerequisite: SWK 103 or permission of instructor.)

SWK 442 3 Credits Fall
Human Behavior in the Social Environment (3+0)
Theoretical frameworks for organizing knowledge about personality development and social behavior of individuals. Includes study of the life cycle and processes that shape individual differences. (Prerequisites: SWK 103, SOC 101, PSY 240, social work major, senior standing and concurrent with SWK 460, 461.)

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. (Prerequisites: SWK 306, social work major, senior standing, concurrent with SWK 461, 442.)

SWK 461 6 Credits Fall
Practicum in Social Work I (0+15)
Individual training and practice in a social service agency. Students complete 200 hours of direct practice in an approved agency under the supervision of a field instructor. (Prerequisites: SWK 306, social work major, senior standing, concurrent with SWK 460, 442.)

SWK 463 3 Credits Spring
Social Work Practice II (3+0)
Further development of student's knowledge of direct practice with clients and development of beginning skills in community work including social planning. Emphasis on aspects of rural practice such as utilization of community associations and the informal helping network. (Prerequisites: SWK 460, 461, 442, social work major, senior standing, concurrent with SWK 464.)

SWK 464 6 Credits Spring
Practicum in Social Work II (0+15)
Continuation of SWK 461; further direct practice experience in an agency. Students complete 200 hours of practice in an approved agency under the supervision of a field instructor. (Prerequisites: SWK 460, 461, 442, social work major, senior standing, concurrent with SWK 463.)

SWK 484 3 Credits As Demand Warrants
Seminar in Social Work Practice Areas (3+0)
Covers problem areas in social work. Problem areas vary in different semesters, content announced in class schedule prior to each semester. Course may be repeated for credit when topic varies. (Prerequisites: SWK 103, junior or senior standing or permission of instructor.)

Sociology

SOC 100X 3 Credits Fall
Individual, Society and Culture (3+0) s
An examination of the complex social arrangements guiding individual behavior and common human concerns in contrasting cultural contexts.

SOC 101 3 Credits Fall, Spring
Introduction to Sociology (3+0) s
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 Independent Learning or via television as a self-paced, computer-aided course; special telecourse fee: $20.00.

SOC 102 3 Credits Fall, Spring
Social Institutions (3+0) s
A continuation of SOC 101: application of the concepts from 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 Independent Learning or 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 major contemporary social problems, analysis of factors causing these problems. Emphasis on 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 242 3 Credits Spring
The Family: A Cross-Cultural Perspective (3+0) s
Contemporary patterns of marriage and family relationships. Developmental, systems, and social psychological approaches used to analyze these relationships. Family life cycle stages examined include mate selection, marriage, early marital interaction, parenthood, the middle and later years, and possible dissolution. Attention given to cross-cultural differences in Alaska as well as in other parts of the world. Also available via Independent Learning. (Prerequisite: SOC 101 or permission of instructor.)

SOC 250 3 Credits Fall, Spring
Introductory Statistics for Behavioral Sciences (3+0)
(Same as PSY 250)
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.

SOC 301 3 Credits Spring
Rural Sociology (3+0) s
Societal processes, changing values, economic development, demographic change, agrarian reforms, planned change, and rural community networks. Part of focus on rural communities of Alaska. (Prerequisite: SOC 101 or permission of instructor.)

SOC 307 3 Credits Spring
Demography (3+0) s
A 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. Alaskan population dynamics examined.

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 context.

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 elsewhere. (Prerequisite: SOC 101. Next offered: 1992-93.)

SOC 330 3 Credits Spring
Social Psychology (3+0) s
(Same as PSY 330)
Analysis of inter-group relationships in terms of process and value orientation, their influences on the personality, and aspects of collective behavior on group and person. Aspects of social interaction that have cultural and intercultural variation. (Prerequisite: SOC 101 or 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 As Demand Warrants
Sociology of Education (3+0)
(Same as ED 345)
The influence of social, political, and economic forces upon schools. Examines how school organization affects teaching practices, 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 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 emphasizing acute and chronic alcoholism, commonly abused drugs, law enforcement and legal aspects of drug abuse, medical uses of drugs, physiological, psychological and sociological aspects of drug abuse, recommended drug education alternatives and plans, and treatment and rehabilitation of acute and chronic drug users. Also available via Independent Learning. (Prerequisite: PSY 101 or SOC 101 or permission of instructor. Next offered: 1992-93.)

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. (Prerequisite: SOC 101 or permission of instructor.)

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 considered. (Prerequisite: SOC 101. Next offered: 1992-93.)

SOC 408 3 Credits Alternate Fall
American Minority Groups (3+0) s
An examination of the status of minority groups and intergroup relations in America, including changes in sociological, economic and political status. Theories and concepts of minority role behavior and intergroup relationships are applied to American and Alaskan racial and ethnic groups. (Prerequisite: SOC 101. Next offered: 1991-92.)

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/SOC 250.)

SOC 638 3 Credits Alternate Fall
Social Policy and Social Change (3+0)
(Same as PSY 638.)

SOC 645 3 Credits Alternate Fall
Prevention Theories and Strategies (3+0)
(Same as PSY 645.)

Spanish

For information on studying in Europe, see Study Abroad.

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 100A 3 Credits As Demand Warrants
SPAN 100B 3 Credits As Demand Warrants
Beginning Spanish I and II(3+0) h
An introductory course in the Spanish language and culture with an emphasis on spoken and written language. After completion of SPAN 100A and 100B the student will be able to continue on to SPAN 102.

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. (Prerequisite for SPAN 102: SPAN 101 or 100B or the equivalent.)

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 cultural material. Conducted in Spanish. (Prerequisite: SPAN 102 or equivalent.)

SPAN 301 3 Credits Fall
SPAN 302 3 Credits Spring
Advanced Spanish (3+0) h
Discussions and essays on more difficult subjects or texts. Translations, stylistic exercises, and special grammatical problems. Conducted in Spanish. (Prerequisite: SPAN 202 or equivalent or instructor permission.)

SPAN 431 3 Credits Fall
Studies in the Culture of the Spanish Speaking World (3+0) h
Study of the cultures of the Spanish speaking world. Conducted in Spanish. Students may repeat course for credit if topic varies. (Prerequisites: SPAN 302 or equivalent; junior standing or permission of instructor.)

SPAN 432 3 Credits Spring
Studies of Literature in Spanish (3+0) h
Intensive study of authors, literary texts, movements, genres, themes and/or critical approaches. Conducted in Spanish. Student may repeat course for credit when topics vary. (Prerequisites: SPAN 302 or equivalent and at least junior standing or permission of instructor.)

SPAN 487 3 Credits Fall
Translation of Spanish Texts (3+0) 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 Spanish. (Prerequisites: SPAN 302 or equivalent and at least junior standing, or permission of instructor. Next offered: 1991-92.)

SPAN 488 3 Credits As Demand Warrants
Individual Study: Senior Project h
Designed for the student to demonstrate ability with the language and the culture through the analysis and presentation, in Spanish, 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

Due to enrollment pressures, it is Department of Speech Communication policy to drop from the class roll students who fail to attend the first two meetings of a basic course (SPC 131X and 141X) even if they have preregistered.

SPC 131X 3 Credits Fall, Spring
Fundamentals of Oral Communication: Group Context (3+0)
The communication process, focusing on listening, perception, verbal and non-verbal communication, and organizing material. Emphasizes increased understanding of and effective performance in small group communication situations.

SPC 141X 3 Credits Fall, Spring
Fundamentals of Oral Communication: Public Context (3+0)
The communication process, focusing on listening, perception, verbal and non-verbal communication, and organizing material. Emphasizes increased understanding of and effective performance in public speaking situations.

SPC 222 3 Credits Fall, Spring
Fundamentals of Interpersonal Communication (3+0)
The communication process, focusing on listening, perception, verbal and non-verbal communication, and organizing materials. Emphasizes understanding of and effective performance in two-person communication situations. May be used to fulfill the oral communication degree requirement under all catalogs through 1990-91.

SPC 225 3 Credits Alternate Years
Listening and Interviewing (3+0)
Examination and application of effective listening skills and interviewing skills used in a variety of situations, considering the roles of both listener and speaker. (Prerequisite: Any 100 level speech communication course or permission of instructor. Next offered: Fall 1991.)

SPC 231 3 Credits Alternate Years
Business and Professional Communication (3+0) s
Focuses on superior/subordinate communication, interviewing, conference and meeting techniques, and presentational speaking. Designed to help business, professional, and communication students enhance their oral communication skills. (Prerequisite: Any 100 level oral communication course or permission of instructor. Next offered: 1992-93.)

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: 1992-93.)

SPC 261 3 Credits Alternate Years
Oral Interpretation (3+0) h
Interpretive reading of a variety of literary forms. Focuses on development of intellectual and emotional responsiveness to literature for increased understanding and appreciation, and expressional skills of voice and body for effective oral interpretation. (Prerequisite: Any 100 level oral communication course, THR 221, or permission of instructor. Next offered: 1991-92.)

SPC 320 3 Credits Alternate Years
Communication and Language (3+0)
Language and meaning in human communication. (Prerequisite: Any lower division speech communication course or permission of instructor. Next offered: 1991-92.)

SPC 321 3 Credits Alternate Years
Nonverbal Communication (3+0) s
Non-lexical behavior in human communication, including consideration 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: 1992-93.)

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. Emphasis on problems in intercultural communication in Alaska. (Prerequisite: Any lower division speech communication course or permission of instructor. Next offered: 1992-93.)

SPC 331O 3 Credits Alternate Years
Advanced Group Communication (3+0) s
Current research and theory in intergroup and intragroup relations. Topics include the study of leadership, power, group structure, participation, and conflict. (Prerequisite: Any 100 level speech communication course or permission of instructor. Next offered: 1992-93.)

SPC 335O 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: 1991-92.)

SPC 342O 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: 1991-92.)

SPC 351 3 Credits Alternate Years
Communication and Women (3+0) s
Communication of women in Western culture both as senders and receivers, with emphasis on the three main areas of the discipline: public address, interpersonal and organizational. (Prerequisite: Any lower division speech communication course or permission of the instructor. Next offered: Fall 1991.)

SPC 352 3 Credits Alternate Years
Family Communication (3+0) s
Function of communication in marriage and the family, sequences and patterns of family communication, the family as a continual process of coping with dialectical tensions, and the complexity of family life in Western societies. (Prerequisite: Any lower division speech communication course or permission of the instructor. SPC 222 recommended. Next offered: Spring 1992.)

SPC 401 3 Credits Alternate Years
Communication Research Methods (3+0)
Empirical and rhetorical-critical research methodologies employed in the conduct of research on communication phenomena. (Prerequisite: Two upper level courses in speech communication or permission of instructor. Next offered: 1992-93.)

SPC 422 3 Credits Alternate Years
Interpersonal Communication (3+0) s
Approaches to interpersonal communication. Emphasis on dialogic/transactive communication within two-person situations. In-depth exploration of theoretical materials related to relational interchanges. (Prerequisite: SPC 222 or permission of instructor. Next offered: Spring 1992.)

SPC 425 3 Credits Alternate Years
Communication Theory (3+0) s
Theories of human communication, as well as of the nature of inquiry into human communication phenomena. Issues 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: 1991-92.)

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: 1991-92.)

SPC 443OW 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 studied. (Prerequisite: Any 300 level oral communication course or permission of the instructor. Next offered: 1992-93.)

SPC 475 3 Credits Alternate Years
Speech Communication in Education and Training (3+0)
Issues pertaining to research and development of instructional units for educational and professional courses. Issues include student needs analysis, syllabi development, behavioral objectives, unit packages, competency, models, and program integration. (Prerequisite: Any 300 level speech communication course or permission of instructor. Next offered: 1992-93.)

SPC 482 3 Credits Alternate Years
Seminar in Speech Communication (3+0)
Current trends and theory in key areas of speech communication are examined. Students concentrate 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: 1991-92.)

Statistics

STAT 200 3 Credits Fall, 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, 161, 181 or consent of instructor)

STAT 300 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 tests, simple linear regression, and one-way analysis of variance. A student may not use STAT 200 and 300 to meet the requirement of a year's sequence course in statistics. (Prerequisite: MATH 200, 262, or 272.)

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 200 or 300.)

STAT 401 4 Credits Fairbanks, Fall
Regression and Analysis of Variance (3+3) Juneau, As Demand Warrants
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 200 [STAT 373-J] or STAT 300.)

STAT 402 3 Credits Fall, 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 200 or 300.)

STAT 461 3 Credits Alternate Spring
Applied Multivariate Statistics (3+0)
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. (Prerequisite: STAT 401 or consent of instructor. Next offered: 1991-92.)

STAT 602 3 Credits Fairbanks and Juneau
Experimental Design (3+0) As Demand Warrants

STAT 621 3 Credits Fairbanks, Alternate Fall
Distribution-Free Statistics (3+0)
Juneau, As Demand Warrants

STAT 640 3 Credits Fairbanks and Juneau
Exploratory Data Analysis (2+2) As Demand Warrants

STAT 661 3 Credits Fairbanks and Juneau
Sampling Theory (3+0) As Demand Warrants

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 description and listing of prerequisites for undergraduate courses 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

Theatre

THR 101, 201
THR 301, 401 1-3 Credits Fall, Spring
Theatre 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 theatre.)

THR 121 3 Credits Fall, Spring
Fundamentals of Acting (3+0) h
Basic stage acting techniques for persons with little or no prior acting experience. Emphasis on 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)
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 200X 3 Credits Fall, Spring
Aesthetic Appreciation: Interrelation of Art, Drama, and Music (3+0) h
(Same as ART 200X and MUS 200X)
Understanding and appreciation of art, drama, and music through an exploration of their relationship. Topics include the creative process, structure, cultural application and diversity, the role of the artist in society, and popular movements and trends.

THR 211 3 Credits Fall, Spring
Theatre Appreciation (3+0) h
A guide to the richer appreciation of theatre through a study of the main periods, styles and playwrights from the classical period to the present.

THR 221 3 Credits Spring
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: 1991-92.)

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: 1992-93.)

THR 325 3 Credits Alternate Fall
Theatre Speech (2+2) h
Vocal techniques for actors. Standard stage diction and foreign dialects. (Prerequisite: THR 221 or permission of instructor. Next offered: 1992-93.)

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 permission of instructor. Next Offered: 1992-93.)

THR 341 3 Credits Spring
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.)

THR 343 3 Credits Alternate Fall
Scene Design (3+0) h
Principles and techniques of theatrical scene design. Includes designing projects directed at solving particular scenic problems or in a specific scenic style with specific physical limitations. Materials fee: approximately $40. (Prerequisite: THR 241 or permission of the instructor. Next offered: 1992-93.)

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. Materials fee: approximately $40. (Prerequisite: THR 343 or permission of the instructor. May be taken concurrently with THR 343. Next offered: 1992-93.)

THR 351 3 Credits Spring
Makeup for Theatre (1+4) h
Theatrical makeup for actors, teachers, directors, and other theatre workers; makeup materials and use, straight and character makeup, illusory and plastic relief, national types, and influence of lighting. Materials fee: approximately $85. (Prerequisite: Any lower division theatre course or permission of the instructor.)

THR 354 3 Credits Fall
Costume Construction and Design (3+0) h
Research, design, and construction of period and modern clothing for the stage. Practice in research and design projects representative of specific periods of dress, as well as practical experience in 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 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 theatre practice and the interpretation of dramatic literature. Next offered: 1992-93.)

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 either THR 221, 241, 343, 347 or permission of instructor.)

THR 411 3 Credits Alternate Years
Theatre History I (3+0) h
Theatrical form and practice from its origins in storytelling and ritual through the French Neo-classic Theatre. (Prerequisites: Junior standing and THR 211 or permission of instructor. Next offered: 1991-92.)

THR 412 3 Credits Alternate Years
Theatre History II (3+0) h
Theatrical form and practice from the English Restoration through the present. (Prerequisites: Junior standing and THR 211 or permission of instructor. Next offered: 1992-93.)

THR 413 3 Credits Alternate Fall
Playscript Analysis (3+0) h
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: 1991-92.)

THR 421 3 Credits Alternate Spring
Advanced Acting II (1+4) h
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
Major theories and current trends in stage direction including 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: 1991-92.)

THR 456 3 Credits Alternate Spring
Intermediate Costuming (3+0) h
Theatrical costuming materials and methods and the continuation of the study of period styles. Special projects in drafting, construction, composition and design. (Prerequisites: THR 211, THR 354 or permission of instructor. Next offered: 1992-93.)

THR 471 3 Credits Alternate Years
Methods in Secondary Theatre Education (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: 1992-93.)

Trades and Technology

Trades and technology courses are offered only at UAF sites outside of Fairbanks.

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 (1+0)
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 further 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 for industry, including arithmetic review, ratios and proportion, powers and roots, algebra, geometry and trigonometry. Mathematical applications 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)
Basic properties, processes and uses of metals and non-metals in tools, machines and building materials. Practical application to building maintenance situations will be emphasized.

TTCH 133 3 Credits As Demand Warrants
Basic Hand and Power Tools (3+0)
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)
Industrial safety including 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)
Systematic approaches to troubleshooting, scheduled and unscheduled maintenance of plant equipment and systems.

TTCH 136 3 Credits As Demand Warrants
Basic Shielded Metal-Arc Welding (3+0)
Introduction to welding in preparation of further study. Topics include welding safety, electrical welding equipment, electrode identification and selection. Welding practice on mild steel in various welder positions. No previous knowledge of welding required.

TTCH 146 2 Credits As Demand Warrants
Furnace Repair (2+0)
Theory of operation, maintenance and repair of oil burning furnaces, both forced air and radiant. Routine maintenance and upkeep of a furnace and trouble shooting procedures for emergency servicing for the homeowner.

TTCH 147 1 Credit As Demand Warrants
Burner Maintenance and Repair (1+2)
Instruction in troubleshooting 10 common problems, reading manuals, changing parts, setting electrodes, changing nozzles, understanding controls and ordering replacement parts.

TTCH 214 3 Credits As Demand Warrants
Heating Systems Design (3+0)
Comprehensive instruction in installation and systems approach to design of heating systems including installation procedures of current systems, heat loss calculation, heat distribution through hydronic and air systems, and boiler and furnace sizing.

TTCH 300 1-3 Credits Fall, Spring
Internship in Technology (0+12)
Supervised practical experience working with private industry, government units or agencies in technologies. Opportunities to apply theories and practical application and to observe procedures and operations of the businesses or agencies. (Prerequisites: Upper division standing and permission of instructor.)

TTCH 485 1-6 Credits Fall, Spring
Advanced Technical Experiences: Discipline Area (variable)
Formal technical up-grade training provided by various agencies, manufacturers, businesses, or industries which are evaluated on an individual basis and must support the student's professional objectives. For Bachelor of Technology students only. The National Guide to Educational Credit for Training Programs used. (Prerequisites: Upper division standing and permission of instructor.)

TTCH 099, 199, 299 1-3 Credits As Demand Warrants
Practicum
Individual work and development of skills learned in prior courses.

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 with a "hands-on" approach.

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)
Arc welding techniques and basic MIG and TIG welding. Materials fee: $200.00. (Prerequisite: WMT 103 or permission of instructor.)

WMT 110 1-3 Credits As Demand Warrants
Oxy-Acetylene Welding (OAW)
A maximum of three credits awarded 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). Presented in competency-based manner.

WMT 115 1 Credit As Demand Warrants
Bronze Gas Welding (OAW Bronze) (1+0)
Credit is granted for successful completion of the certification test. WMT 115A-Certif OAW (1G). Presented in competency- based manner.

WMT 130 1-3 Credits As Demand Warrants
Shielded Metal Arc Welding (SMAW)
All positions emphasized for multiple pass fillet welds. A maximum of three credits are awarded 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). Presented in competency-based manner.

WMT 150 1-3 Credits As Demand Warrants
Gas Tungsten Arc Welding (GTAW)
Use of tungsten and argon gas for aluminum and stainless steel gas welding (formerly called Heliarc). A maximum of three credits are awarded 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). Presented in competency-based manner.

WMT 160 1-3 Credits As Demand Warrants
Gas Metal Arc Weld Alum (GMAW)
Prepare student to work on microwire processes. A maximum of three credits awarded for successful completion of any of the four sections; 160A-Certif GMAW M.Steel (1F); 160B-Certif GMAW M. Steel (2F); 160C-Certif GMAW M. Steel (3F); 160D-Certif GMAW M. Steel (4F). Presented in competency-based manner.

WMT 241 3 Credits Fall
Gas Tungsten Arc and Gas Metal Arc Welding (1.5+5.5)
Entry-level gas tungsten arc welding concentrating on aluminum. Materials will be welded in all positions. Gas metal arc welding focuses on ferrous and nonferrous metals welded in all positions. Material fee: $250.00.

WMT 261 3 Credits As Demand Warrants
Aviation Welding (2+2)
Tungsten inert gas and oxyacetyene are used to weld Moly steel aircraft structural parts. Basic aircraft joints and sheet metal joints are 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)
Major aspects of wildlife biology and management, research of local wildlife biologists and programs of management agencies. (Prerequisite: Completion of a course emphasizing the biology of non-human organisms.)

WLF 201 3 Credits Spring
Wildlife Management Principles (2+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. (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. Topics include using 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. Term paper required. Laboratory fee: $20.00. (Prerequisites: WLF 201 or equivalent, BIOL 271.)

WLF 304 1-3 Credits Fall, Spring
Wildlife Internships
Practical experience in wildlife management in public or private agencies. Projects are approved by faculty member and supervised by professional agency staff. May not be substituted for courses required for major. (Prerequisite: Permission of instructor.)

WLF 305 3 Credits Alternate Spring
Wildlife Diseases (2+3)
Basic concepts of parasitic, infectious, environmental, and nutritional diseases. Specific study of Alaskan wildlife diseases. Basic necropsy technique and chemical immobilization. Laboratory fee: $20.00. (Prerequisites: BIOL 105, 106 or equivalent and permission of instructor. Recommended: BIOL 205 or 222 and BIOL 210. Next offered: 1991-92.)

WLF 360 3 Credits Fall
Nutrition and Physiological Ecology of Wildlife (3+0)
Concepts and techniques used by wildlife managers to understand relationships between wild animals and their habitats. 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: $20.00. (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: WLF 201 or permission of the instructor. BIOL 425 and 426 recommended. Next offered: 1991-92.)

WLF 419 4 Credits Alternate Fall
Waterfowl and Wetlands Ecology and Management (3+3)
Ecology of waterfowl and associated wetland habitats. Management of populations, including harvest and manipulation of habitats. Distribution, abundance, taxonomy and identification of North American waterfowl. Laboratory fee: $20.00. (Prerequisite: BIOL 271, 426, and WLF 201 or permission of instructor. Next offered: 1991-92.)

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 603 3 Credits Alternate Fall
Biotelemetry (2+3)

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, Spring
Graduate Seminar (0+0+1)



Jim Teich constructs a clay mixing bowl in an advanced ceramics class.

Register

UA Board of Regents

Robert F. Williams (1985-1993) President
P.O. Box 5555, Kenai, AK 99611

Morris Thompson (1989-1993) Vice President
Doyon Ltd., 201 First Avenue, Fairbanks, AK 99701

Susan A. Stitham (1987-1995) Secretary
P.O. Box 80913, Fairbanks, AK 99708

Mark H. Helmericks (1987-1995) Treasurer
c/o C.E.S., Inc., P.O. Box 12, Prudhoe Bay, AK 99734

Virginia W. Breeze (1989-1997)
c/o Corporate Communication Strategies, 101 East 9th Avenue, Suite 12B, Anchorage, AK 99501

Eric Forrer (1989-1997)
P.O. Box 34383, Juneau, AK 99803

Sharon D. Gagnon (1991-1999)
6721 Roundtree Drive, Anchorage, AK 99516

Joseph R. Henri (1991-1999)
9921 Near Point Drive, Anchorage, AK 99507

Michael P. Kelly (1991-1999)
c/o Golden Valley Electric Association, P.O. Box 71249, Fairbanks, AK 99707

Mary F. Reeve (1990-1991)
c/o UAA Native Student Center, 3211 Providence Drive, Building K, Room 101, Anchorage, AK 99508

Lew M. Williams Jr. (1991-1999)
755 Grant Street, Ketchikan, AK 99901

Emeriti

Allison, Richard C., Professor of Geology, Emeritus. University of Washington '57, B.S.; '59 M.S.; University of California '67, Ph.D. (1968-1987)

Bedford, Jimmy, Professor of Journalism, Emeritus. University of Missouri '50, A.M.; '51, B.J.; '52, M.A. (1965-1981) Deceased

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. (1959-1964; 1970-1988)

Biesiot, Peter G., Professor of Business Administration, Emeritus. University of Washington '42, B.A.; University of Nebraska '51, M.S.; Cornell University '58, M.B.A.; University of Southern California '66, D.B.A. (1980-1990)

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

Choy, Terence Tin-Ho Professor of Art, Emeritus. San Francisco State College '65, B.A.; University of California, Berkeley '67, M.A.(1970-1990)

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.A.; '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)

Deehr, Charles Sterling, Professor of Physics, Emeritus. Reed College '58, B.A.; University of Alaska '61, M.S.; '68, Ph.D. (1958-1988)

Dieterich, Robert A. Professor of Veterinary Science, Emeritus. University of California '61, B.S.; '63, D.V.M. (1967-1987)

Dinkel, Don H., Professor of Plant Physiology, Emeritus. University of Minnesota '54, B.S.; '60, Ph.D. (1960-1966, 1968-1983)

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)

Feder, Howard M., Professor of Biology, Emeritus. University of California, Los Angeles '48, A.B.; '51, M.A.; Stanford University '56, Ph.D. (1970-1990)

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) Deceased

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)

Haneman Jr., Vincent S., Dean of the School of Engineering, Emeritus and Professor of Mechanical Engineering, Emeritus. Massachusetts Institute of Technology '47, B.S.; University of Michigan '50 M.S.E. (AE); '56 Ph.D. (AE). (1980-1991)

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. (1964-1986)

Hawkins, Daniel B., Professor of Geology and Chemistry, Emeritus. Montana State College '56, B.S.; '57, M.S.; Pennsylvania State University '61, Ph.D. (1967-1990)

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)

Lando, Barbara M., Professor of Mathematics and Computer Science, Emeritus. Georgian Court College '62, B.A.; Rutgers University '64, M.S.; '69, Ph.D. (1969-1990)

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)

O'Rourke, Patrick J., Chancellor, Emeritus. St. John's University '64, B.A.; Indiana State University '68, M.S.; University of Connecticut '77, Ph.D. (1970-1991)

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)

Phillips, William G., Professor of Business and Finance, Emeritus. Waynesburg College '52, B.S.; American Graduate School of International Management '58, B.F.T.; University of Nebraska '67, M.A.; '70, Ph.D. (1975-1991)

Rae, Kenneth M., Vice President for Research and Professor of Marine Science, Emeritus. University College, London '35, B.Sc.; '58, Ph.D. (1961-1976) Deceased

Ray, Charles K., Professor of Education, Emeritus. University of Colorado '51, B.A.; Columbia University '55, M.A.; '59, Ed.D. (1957-1991)

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)

Sandberg, Harlem D., Associate Professor of Extension Education, Emeritus. University of Minnesota '55, B.S.; Michigan State University '64, M.A.; '75, Ed.S. (1965-1984)

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)

Thomas, Wayne C., Professor of Economics, Emeritus. California State Polytechnic College '65, B.S.; University of Nevada '67, M.S.; Washington State University '71, Ph.D. (1971-1990)

Tiedemann, James B., Professor of Mechanical Engineering, Emeritus. University of Wisconsin '45, B.S.; '49, M.S.; '55, Ph.D.; P.E. (1965-1986)

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)

Turner, Donald L., Professor of Geology, Emeritus. University of California, Berkeley, '60, A.B.; '68, Ph.D. (1970-1988)

Turner, John L., Professor of Education, Emeritus. McMurry College '51, B.S.; North Texas State University '55, M.Ed.; New Mexico State University '68, Ed.S. (1966-1989) Deceased

Van Veldhuizen, Philip, Professor of Mathematics, Emeritus. Central College '52, B.A.; State University of Iowa '60, M.S. (1963-1988)

Weeden, Robert B., Professor of Resource Management, Emeritus. University of Massachusetts '53, B.S.; University of Maine '55, M.S.;University of British Columbia '59, Ph.D. (1967-1990)

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)

Wright, Gordon B., Professor of Music, Emeritus. College of Wooster '57, B.M.; University of Wisconsin '61, M.A. (1969-1989)

UAF Executive Council

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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 Alaska Fairbanks unit in which the employee works.

The abbreviations are:

AFES	Agricultural and Forestry Experiment Station
ATHREC	Athletics and Recreation
C&SE	Conferences and Institutes
CC	Chukchi Campus
CLA	College of Liberal Arts
CNS	College of Natural Sciences
CRA	College of Rural Alaska
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
PC&IS	Planning, Computing & Information Systems
RCTR	Rural Centers
SALRM	School of Agriculture and Land Resources Management
SCCE	School of Career and Continuing Education
SOE	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 — 1964 — Associate Professor of Library Science (1975), LIB. Bowling Green State University '58, B.A.; University of Illinois '59, M.S.L.S.

Adams, Dennis — 1990 — Professor of Education (1990), CRA.California State University '63, B.A.; University of Southern California '65, B.A.; University of Wisconsin '73, Ph.D.

Adams, Gail — 1990 — Assistant Student Activities Coordinator (1990), STUAFF. University of Alaska Fairbanks '90, B.B.A.

Adams, John L. — 1982 — Instructor of Music (1990), CLA. California Institute of the Arts '73, B.F.A.

Afrouz, Andeshir — 1990 — Visiting Asssociate Professor (1990), SME. Wigan Mining College '68, Higher National Diploma; University of Wisconsin '70, M.S.; University of Oklahoma '71; University of Wales '73, Ph.D.

Akasofu, Syun-Ichi — 1958 — Director of the Geophysical Institute (1986) and Professor of Geophysics (1964). Tohoku University '53, B.S.; '57, M.S.; University of Alaska '61, Ph.D.

Albertson, LaMont E. — 1987 — Director and Instructor of Education (1987), KUC/CRA. Oklahoma Baptist University '66, B.A.; Florida Atlantic University '67, M.Ed.

Albrecht, C. Earl — 1979 — Affiliate Professor of Medical Science (1979), CNS. Moravian College, Pennsylvania '26, B.A.; Moravian Theological Seminary '28, B.D.; Jefferson Medical College '32, M.D.

Alexander, Barbara — 1977 — Associate Professor of Humanities, (1985), CLA; University of Zurich '75, Ph.D.

Alexander, Vera — 1962 — Dean, School of Fisheries and Ocean Sciences (1989); Director, Institute of Marine Science (1979); and Professor of Marine Science (1974), SFOS/IMS. University of Wisconsin '55, B.A.; '62, M.S.; University of Alaska '65, Ph.D.

Alexie, Oscar — 1983 — Adjunct Faculty/ Research Associate, (1989), KUC/CRA; University of Zurich '75, Ph.D.

Allen, James — 1990 — Assistant Professor of Psychology (1990), CRA. University of Wisconsin-Madison '72, B.A.; University of Montana '88, M.A.; '90, Ph.D.

Allen, Jane B. — 1989 — Instructor of Developmental Studies (1989), KUC/CRA. Indiana University '72, A.B.; '75, M.S.

Alton, Tom — 1989 — Editor, Alaska Native Language Center (1989), CLA. University of Alaska Fairbanks '74, B.A.; University of Montana '83, M.A.

Anderl, Robert — 1990 — Associate Professor of Library Science (1990), LIB. Syracuse University '62, B.S.; '65, M.S.L.S.

Anderson, Betty — 1988 — Instructor of Biology, Independent Learning Program, (1988), CRA.

Anderson, Candice M. — 1971 — Coordinator (1986), VCA. Western Washington State University '70, B.A.

Anderson, James H. — 1970 — Research Associate (1976), IAB. University of Washington '63, B.S.; Michigan State University '70, Ph.D.

Andes, Roy — 1990 — Visiting Instructor of Speech Communication (1990), CLA. Bridgewater College '73, B.A.; University of Virginia School of Law '77, J.D; University of Montana '88, M.A.

Andresen, Patricia A. — 1967 — Director, Honors Program (1990), CLA. University of Illinois '55, B.S.; University of Missouri '58, M.A.; University of California at Santa Barbara '76, Ph.D.

Andrew, Eileen — 1990 — Instructor, Community Health Aid Program (1989), KUC/CRA. MEDEX Northwest, University of Washington '87, Physician Assistant.

Andrews, Susan B. — 1989 — Assistant Professor of General Studies and Adjunct Assistant Professor of Journalism and Broadcasting (1989), CC/CRA. Smith College '81, B.A.; University of Oregon '83, M.A.

Anelon Jr., Greg — 1989 — Coordinator of Adult Basic Education (1990), KUC/CRA. University of Alaska '87, B.A.; '90, M.Ed.

Antohin, Anatoly — 1989 — Associate Professor of Theatre (1989), CLA. Institute of Cinematography, U.S.S.R. '75, M.F.A.

Argall, Marcia C. — 1987 — Assistant Director of Rural Alaska Health Education Center (1990), CRA. University of Washington '79, B.A.

Armbruster, W. Scott — 1980 — Associate Professor of Botany (1987), CNS, IAB. University of California, Santa Barbara '72, B.A.; University of California, Davis '77, M.S.; '81, Ph.D.

Arps, Peggy J. — 1989 — Assistant Professor of Biochemistry (1989), CNS. Cornell University, B.A.; Johns Hopkins University, M.S.; '83, Ph.D.

Arundale, Robert — 1979 — Associate Professor of Speech Communication (1985). CLA. Rensselaer Polytechnic Institute '63, B.S.; '64, M.S.; Michigan State University '71, Ph.D.

Arundale, Wendy H. — 1979 — Senior Research Associate (1979), IAB. Brown University '67, A.B.; Michigan State University '72, M.A.; '76, Ph.D.

Arvey, Martha M. — 1988 — Visiting Assistant Professor of Library Science (1989), LIB. Scripps College '63, B.A.; University of California, Los Angeles '64, M.L.S.

Aspnes, John D. — 1978 — Professor of Electrical Engineering (1981), and Head, Department of Electrical Engineering (1983), SOE. University of Wisconsin '65, M.S.; Montana State University '76, Ph.D.; P.E.

Ayagarak, Nancy — 1989 — Instructor of Developmental Studies (1989), KUC/CRA. University of Washington, B.A.; Western Oregon State '83, M.S.

Bachner, Nancy — 1974 — Conference Coordinator (1981), C&SE.

Bader, Harry R. — 1990 — Assistant Professor of Natural Resource Policy (1990), SALRM. Washington State University '85, B.A.; Drake Law School '86, C.L.E.; Harvard Law School '88, Ph.D.

Badger, Mark O. — 1982 — Executive Producer, KUAC-TV and Affiliate Assistant Professor of Broadcasting (1990), CLA. University of Alaska Fairbanks '73, B.S.; Cambridge University '90, M.S.; '93 Ph.D.

Bailey, Regina L. — 1990 — Coordinator (1990), VCAA. SUC Geneseo '73, B.S.; '72, Troy State University '81, M.S.

Baker, Elisha R. — 1989 — Associate Professor of Engineering and Science Management (1990), SOE. Clemson University '70, B.S.; '72, M.S.; '75, Ph.D.

Baker, Grant C. — 1988 — Assistant Professor of Mechanical Engineering (1990), SOE. University of Washington, B.S.; University of Alaska Fairbanks, M.S.; Ph.D.

Baker, Jill H. — 1988 — Assistant Professor of Social Work (1988), CRA. University of Texas '68, B.A.; University of Hawaii '81, M.S.W.

Baldridge, James N. — 1969 — Senior Programmer/Analyst (1976), GI.

Bandopadhyay, Sukumar — 1982 — Associate Professor of Mining Engineering (1987), SME. Banaras Hindu University, India, '70, B.Sc.; '75, M. Tech.; Pennsylvania State University '79, M.S.; '81, Ph.D.

Barber, Willard E. — 1976 — Associate Professor of Fisheries (1988), SFOS. Arizona State University '65, B.A.; '68, M.S.; Michigan State University '70, Ph.D.

Bargar, Harold E. (Ed) — 1990 — Project Engineer-Mechanical (1990), VCA. University of Nebraska '77, B.S.M.E.; P.E.

Barnes, Brian M. — 1986 — Associate Professor of Zoophysiology (1991), IAB, CNS. University of California, Riverside '77, B.S.; University of Washington '83, Ph.D.

Barnes, Sophie — 1983 — Adjunct Faculty and Research Associate (1989), KUC/CRA. Kuskokwim Community College '78, A.A.; University of Alaska Fairbanks '83, B.Ed.

Barnhardt, Carol — 1988 — Instructor of Education, Independent Learning Program (1988), CRA.

Barnhardt, Raymond J. — 1970 — Professor of Cross-Cultural Education and Rural Development (1980), CRA. North Dakota State University '65, B.S.; John Hopkins University '67, M.Ed.; University of Oregon '70, Ph.D.

Barrick, Kenneth A. — 1985 — Assistant Professor of Geography (1985), CLA. Shippenburg University of Pennsylvania '74, B.A.; '78 M.S.; Southern Illinois University-Carbondale '82, M.S.; '83, Ph.D.

Bartholomew, Karla — 1991 — Instructor of Community Health Aid Training (1991), KUC/CRA. University of Maryland '85, B.S.; Emery University '87, B.M.S.

Bartlett, DorisAnn — 1982 — Instructor of English (1985), CLA. Middlebury College '55, B.A.; University of Alaska-Anchorage '73, M.A.; University of Oregon '77, Ph.D.; '81, M.A.

Bartlett, Thomas E. — 1974 — Associate Professor of Accounting Information Systems (1979), SOM. Southwestern at Memphis '67, B.A.; Emory University '69, M.B.A.; State of Georgia '73, C.P.A.; State of Alaska '78, C.P.A.

Basham, Charlotte S. — 1983 — Associate Professor of Anthropology, Cross-Cultural Communication and Linguistics (1991), CLA. Arizona State University '67, B.A.; San Jose State University '77, M.A.; University of Michigan '86, Ph.D.

Basham, Lynn — 1986 — Instructor of Linguistics, Independent Learning Program (1988), CRA and Instructor of Cross Cultural Communication (1988), CLA. San Jose State University '66, B.A.; '76, M.A.

Batten, Alan R. — 1976 — Research Associate (1976), UAM. Colorado State University, Fort Collins '66, B.S.; University of Alaska Fairbanks '77, M.S.

Bauer, Timothy — 1980 — Accountant (1985), VCA. Central Michigan University '69, B.S.; University of Alaska Fairbanks '85, M.B.A.; CPA; CIA.

Beberg, Paul J. — 1990 — Cross Country Running Coach (1990), ATHREC. University of New Mexico '86, B.U.S.

Beget, James E. — 1984 — Assocate Professor of Geology (1991), CNS. Columbia University '74, B.S.; University of Washington '77, M.S.; '81, Ph.D.

Benesch, Walter J. — 1963 — Professor of Philosophy (1973) and Head, Department of Philosophy/Humanities, CLA. University of Denver '55, B.A.; University of Montana '56, M.A.; Leopold Franzens Universitat, Innsbruck '63, Ph.D.

Benevento, John — 1979 — Supervisor, Electronics Shop, (1979), GI. Massachusetts Institute of Technology '63, A.E.

Bennett, F. Lawrence — 1968 — Professor of Engineering Management (1974) and Head, Department of Engineering Management (1983), SOE. Rensselaer Polytechnic Institute '61, B.C.E.; Cornell University '63, M.S.; '66, Ph.D.; P.E.; L.S.

Berman, Gerald S. — 1980 — Associate Professor of Sociology and Social Work (1980), CRA. University of Michigan '56, B.A.; Case Western Reserve University '63, M.S.W.; '70, Ph.D.

Biesiot, Peter G. — 1980 — Professor of Business Administration (1980), SOM. University of Washington '42, B.A.; University of Nebraska '51, M.S.; University of Southern California '66, D.B.A.

Bigjim, Fred — 1988 — Instructor of Alaska Native Politics, Independent Learning Program (1988), CRA. University of Alaska Fairbanks '72, B.A.; Harvard University '73, M.Ed.

Billington, Margaret M. — 1970 — Coordinator (1989), SFOS/IMS. University of California, Berkeley '66, B.A.; University of Alaska Fairbanks '81, M.S.

Bird, Roy K. — 1984 — Professor of English (1991), CLA. Brigham Young University '72, B.A.; '74 M.A.; William Marsh Rice University '82, Ph.D.

Birkeland, Mary M. — 1987 — Assistant Professor of Education and Field Coordinator (1987), CRA. Western Washington State College '76, B.Ed.; University of Oregon '84, M.Ed.; '87, Ph.D.

Bishop, Suzanne Stolpe — 1990 — Public Information Officer (1990). Lewis and Clark College '82, B.S.

Biswas, Nirendra N. — 1971 — Professor of Geophysics (1983), CNS. Geophysical Institute, Indian Institute of Technology, India '55, B.Sc.Hons. '57, M. Tech; University of California, Los Angeles '71, Ph.D.

Blacher, Maurice — 1987 — Assistant Professor of Military Science (1987), CLA. Rutgers University '80, B.S.; University of Louisville '86, M.Ed.

Black, Lydia T. — 1984 — Professor of Anthropology (1985), CLA. Northeastern University '69, B.S.; Brandeis University '71, M.A.; University of Massachusetts, Amherst '73, Ph.D.

Blake, John — 1988 — Assistant Professor of Veterinary Science (1987), CNS. University of Saskatchewan '87, M.S.; '80, D.V.M.

Blalock, Susan Elizabeth — 1986 — Assistant Professor of English (1989), Director, Writing Center (1986), CLA. Louisiana State University '68, B.A.; New York University '70, M.A.; University of Texas '83, Ph.D.

Blurton, David M. — 1989 — Assistant Professor of Rural Development and Field Coordinator (1990), CRA. Humboldt State University, California '75, B.S.; University of Montana '85, J.D.

Book, Patricia A. — 1986 — Dean, School of Career and Continuing Education (1988); Associate Faculty of Anthropology (1987). Oakland University '72, B.A.; University of Connecticut '75, M.A.; '80, Ph.D.

Borchert, Mary Ann — 1971 — Assistant to Vice Chancellor for Research/Dean of Graduate School (1987), VCR. Denison University '62, B.S.; Ohio State University '64, M.S.; University of Alaska Fairbanks '88, M.S.

Borgeson, Cory — 1983 — Adjunct Assistant Professor of Business Administration (1985), SOM. Oakland University '78, B.A.; Drake University School of Law '81, J.D.

Bowling, Sue Ann — 1970 — Assistant Professor of Geophysics (1972), CNS. Radcliffe '63, A.B.; University of Alaska '67, M.S.; '70, Ph.D.

Bowyer, R. Terry — 1986 — Associate Professor of Wildlife Ecology (1988), CNS, IAB. Humboldt State University '70, B.S.; '76, M.S.; University of Michigan '85, Ph.D.

Box, Mark A. — 1990 — Assistant Professor of English (1990), CLA. Northern Illinois University '74, B.A.; '78, M.A.; University College, Oxford University '85, Ph.D.

Boyce, John — 1988 — Assistant Professor of Economics (1988), SOM. Montana State University '82, B.A.; University of California, Davis '90, Ph.D.

Braddock, Joan Forshaung— 1990 — Assistant Professor of Biology (1990), CNS,IAB. University of Alaska Fairbanks '77, B.S.; '83, M.S. '89, Ph.D.

Bradley, Claudette — 1989 — Assistant Professor of Education (1989, CRA. University of Connecticut '64, B.A.; '67, M.S.; Harvard Graduate School of Education '87, Ed.D.

Brady, Philip L. — 1989 — Assistant Professor of Education (1990), CRA. University of California, Riverside '71, B.A.; University of Washington '75, M.A.; University of Oregon '90, Ph.D.

Brannen, Ulysses S. Jack — 1990 — Government Contract Specialist (1990), SCCE. San Diego Jr. College '58, A.A.

Brelsford, Taylor W. — 1988 — Instructor of Rural Development (1988), CRA. University of Alaska Anchorage '77, B.A.; McGill University '83, M.A.

Brennen, E. Clifford — 1984 — Professor of Social Work (1984), CRA. San Francisco State University '56, B.A.; University of California, Berkeley '58 M.S.W.; '68, D.S.W.

Brigham, Jerry C. — 1989 — Associate Professor of Broadcasting (1989), CLA. University of Oklahoma '66, B.F.A.; '71, M.F.A.; '75, Ph.D.

Brody, Arthur W. — 1967 — Professor of Art (1984), CLA. Harvey Mudd College '65, B.S.; Claremont Graduate School '67, M.F.A.

Brown, Carol W. — 1965 — Assistant Director, Wood Center and Student Activities (1985), STUAFF.

Brown, Edward J. — 1975 — Professor of Microbiology and Water Resources (1988), INE. University of Minnesota '70, B.S.; University of Wisconsin '73, M.S.; '75, Ph.D.

Brown, Neal — 1966 — Assistant Professor of Geophysics (1969), CNS. Washington State University '61, B.S.; University of Alaska '66, M.S.

Browne, Dauna B. — 1989 — Coordinator and Associate Professor of Guidance and Counseling (1989), and Head, CRA. University of North Dakota, Ellendale '64, B.S.; University of Northern Colorado '67, M.A.Ed.; '70, Ed.D.

Bruce, Leroy Ben — 1984 — Associate Professor of Animal Science (1989), SALRM. New Mexcio State University '73, B.S.; '77, M.S.; '79, Ph.D.

Bryant, John P. — 1985 — Associate Professor of Plant Ecology (1990), IAB, CNS. Colorado State University '66, B.A.; University of Calgary '68, M.S.; University of Alaska Fairbanks '84, Ph.D.

Bublitz, Christopher G. — 1981 — Program Coordinator (1981), SFOS/FITC. Bowling Green State University '75, B.S.; University of Alaska '81, M.S.

Bundschuh, Paul A. — 1989 — ASF VAX System Manager (1990), GI. University of Notre Dame '87, B.S.E.E.

Burchfield, Jennifer E. — 1987 — Financial Analyst (1990), PC&IS. University of Alaska Fairbanks '90, B.B.A.

Burns, Cooper G. — 1990 — Assistant Professor of English (1990), CLA. Yale University '83, B.A.; University of Texas '86, M.A.; '89, Ph.D.

Burns, Laurel — 1986 — Affiliate Assistant Professor of Geology (1986), CNS. University of Alaska '78, B.S.; Stanford University '81, M.S.; '83, Ph.D.

Burton, James R. — 1973 — Supervisor of Photo-Graphics Service Center (1983), GI.

Butcher, Barbara — 1980 — Associate Professor of Extension, Home Economics (1987), CES. Indiana University '63, B.S.; '70, M.S.

Butler-Hopkins, Kathleen M. — 1979 — Professor of Music (1990),CLA. Trinity College of Music, London, England, '71, F.T.C.L.; The Juilliard School '75, B.M.; '76, M.M.; Yale University School of Music '78, M.M.A., D.M.A., 1982.

Button, Don K. — 1964 — Professor of Marine Science and Biochemistry (1973), SFOS/IMS, CNS. Wisconsin State College '55, B.S.; University of Wisconsin '61, M.S.; '64, Ph.D.

Byers, Kurt M. — 1988 — Communications Manager/Editor (1988), SFOS/SG. University of Michigan '85, B.S.

Byrne, Jonathan — 1987 — Instructor of English (1987), CC/CRA. University of Minnesota '83, B.A.

Cain, Seth — 1987 — Buyer (1988), VCA.

Caldwell, Patt — 1985 — Instructor of Education and Clinical Experience Coordinator (1990), CRA. Winthrop College '64, B.S.; Memphis State University '70, M.Ed.

Calkins, Harry — 1988 — Visiting Instructor of Art (1988), CLA. San Jose State College '65, B.A.; '67, M.A.

Callahan, Thomas J. — 1988 — Master, *R/V Alpha Helix* (1988), SFOS/IMS. Loras College '65, B.A.

Candler, Rudolph J. — 1974 — Supervisor Soil and Plant Analysis Laboratory (1988), SALRM. Colorado State University '67, B.S.; '74, M.S.; '87, Ph.D.

Carling, Donald E. — 1981 — Professor of Horticulture (1991), SALRM. St. Cloud State '67, B.A.; University of Missouri-Columbia '69, M.S.; University of Missouri-Columbia '75, Ph.D.

Carlson, Robert F. — 1965 — Professor of Civil Engineering (1974), SOE. University of Wisconsin '61, B.S.; '63, M.S.; '67, Ph.D.; P.E.

Carroll, JoLynn — 1990 — Postdoctoral Fellow (1990), SFOS/IMS. New College of USF '83, B.S.; University of South Carolinia '86, M.S.; '90, Ph.D.

Castellini, Michael A. — 1989 — Assistant Professor of Marine Science (1989), SFOS/IMS. University of California, San Diego '75, B.A.; Scripps Institution of Oceanography '81, Ph.D.

Caulfield, Richard A. — 1985 — Instructor of Rural Development (1985), CRA. University of California-Berkeley '73, B.S.; '73, B.A.

Cedzo, Karen L. — 1979 — Associate Vice Chancellor for University Relations and Institutional Advancement (1990). University of Wisconsin '73, B.A.; '75, M.A.

Chadwick, Jerah — 1982 — Instructor of English and Coordinator, Aleutians Center (1988), CRA. Lake Forest College, Illinois '78, B.A.; University of Alaska Fairbanks '88, M.F.A.

Chamberlain, Steve — 1987 — Instructor of Liberal Arts (1987), KUC/CRA. Wayne State University '71, B.S.; University of Montana '73, M.F.A.

Champion, Charles A. — 1973 — Adjunct Associate Professor of Petroleum Engineering (1979), SME. Colorado School of Mines '52, B.S.; University of Southern California '62, M.S.; P.E.

Charlton, Issac — 1989 — Instructor of Accounting Information Systems, Independent Learning Center (1989), CRA. Eastern Illinois University '64, B.S.; Indiana University '71, M.S.

Chin, Wanda W. — 1979 — Coordinator of Exhibits, UAM. University of California, Los Angeles '74, B.A.

Choudhury, Gour — 1990 — Assistant Professor of Seafood Engineering (1990), SFOS/FITC. University of Gauhati (India) '73, B.S.; University of Mysore (India) '76, M.S.; University of Alberta '87, Ph.D.

Chowdhury, Ataur R. — 1991 — Assistant Professor of Physics (1991), CNS. Dacca University '75,B.S; M.S.; Clark University '85, Ph.D.

Christensen, Douglas — 1988 — Assistant Professor of Geophysics (1988), CNS, GI. University of Utah '77, B.S.; University of Michigan '79, M.S.; '87, Ph.D.

Chukwu,Godwin A. — 1990 — Visiting Assistant Professor (1990), SME. University of Southwestern Louisiana '79, B.S.; '80, M.S.; University of Oklahoma '89, Ph.D.

Clark, Claudia C. — Assistant Professor of Journalism/Broadcasting (1989), CLA. Feather River College '77, A.A.; Montana State University '83, B.S.; '88 M.Ed.

Clausen, Richard — 1979 — Instructor of Mathematics (CLA). University of Alaska '75, B.S.; University of Oregon '77, M.S.

Clausen, Thomas — 1975 — Senior Research Associate (1982), IAB. University of Alaska Fairbanks '75, B.S.; Michigan State University '80, Ph.D.

Cochran, Verlan L. — Affiliate Associate Professor of Agronomy (1985), SALRM. California State Polytechnic College '66, B.S.; Washington State University '71, M.S.

Coetzee, Nicolaas F. — 1982 — Adjunct Associate Professor of Civil Engineering (1987), SOE. University of Natal, Durban, S. Africa '72, B.S.; University of California, Berkley '75, M.S.; '79, Ph.D.

Cole, Terrence M. — 1988 — Associate Professor of History (1991), CLA. University of California, Berkeley '76, B.A.; '78, M.A.; University of Washington '83, Ph.D.

Collie, Jeremy S. — 1988 — Assistant Professor of Fisheries (1988), SFOS/JCFOS. University of York, England '80, B.Sc., Massachusetts Institute of Technology/Woods Hole Oceanographic Institution Joint Program in Oceanography '85, Ph.D.

Colligan-Taylor, Karen — 1984 — Associate Professor of Japanese and Department Head (1986), CLA. University of California, Berkeley '71, B.A.; '75, M.A.; Stanford University '85, Ph.D.

Collins, Raymond L. — 1987 — Coordinator of McGrath Center (1987), RCTR/CRA. University of Alaska Fairbanks '74, B.S.

Conn, Jeffrey S. — 1980 — Associate Professor of Weed Science (1980), SALRM. University of Arizona '73, B.S.; '76, M.S.; North Carolina State University '80, Ph.D.

Connor, William — 1983 — Director, Center for Health and Counseling (1989), STUAFF, and Assistant Professor of Psychology, (1983), CRA. State University College at Cortland, New York '72, B.S.; University of Delaware '74, M.Ed.; University of Missouri-Columbia, '83, Ph.D.; Licensed Psychologist '85.

Cook, Joseph A. — 1989 — Assistant Professor of Biology and Curator of Mammalogy (1989), UAM. Western New Mexico University '80, B.S.; University of New Mexico '82, M.S.; '90, Ph.D.

Cooney, R. Theodore — 1970 — Associate Professor of Marine Science (1976), SFOS/IMS. University of Washington '64, B.S.; '67, M.S.; '71, Ph.D.

Cooper, Charles L. — 1990 — Assistant Professor of Mathematics (1990), CLA. University of Oklahoma '76, B.S.; '82, M.A.; '90, Ph.D.

Copeland, Audrey — 1989 — Instructor of History, Independent Learning Program (1989), CRA. University of Michigan '64, B.A.

Copus, Gary — 1980 — Associate Professor of Criminal Justice (1974) and Head, Department of Political Science/Justice (1988), CLA. Georgia Institute of Technology '67, B.S.; Sam Houston State University '68, M.S.; University of Missouri '72, Ph.D.

Cordova, Viola F. — 1989 — Instructor of Philosophy (1989), CLA. Idaho State University '80, B.A.; University of New Mexico '85, M.A.

Cornwall, Marguerite — 1982 — GNOSIS Systems Manager (1987), PC&IS. University of Toronto '62, B.A.; University of Michigan '66, A.M.L.S.

Cornwall, Peter G. — 1971 — Associate Professor of History (1973), CLA. University of Toronto '62, B.A.; University of Michigan '63, A.M.; '70, Ph.D.

Cottam, Martha L. — 1989 — Assocaite Professor of Political Science (1989), CLA. University of Wisconsin '76, B.A.; University of California '77, M.A.; '83, Ph.D.

Coughenower, D. Douglas — 1982 — Marine Extension Agent (1982) and Associate Professor of Fisheries (1988), SFOS/MAP. Oregon State University '63, B.S.; '72, M.S.; '74, M.S.

Coutant, Basil W. — 1990 — Assistant Professor of Mathematics (1990), CLA. Ohio University '83, B.S.; '84, M.S.; '90, Ph.D.

Cox, Clifford T. — 1980 — Associate Professor of Accounting Information Systems (1987), SOM. University of Northern Iowa '71, B.B.A.; Kansas State University '75, M.B.A.; University of Kansas, C.P.A.; University of Iowa '81, Ph.D.

Coyle, Kenneth O. — 1971 — Research Associate (1988), SFOS/IMS. University of Washington '72, B.S.; University of Alaska '74, M.S.

Crandell, Patricia A. — 1991 — Research Associate (1991), SFOS/JCFOS. University of California at Davis '83, B.S.; '90, Ph.D.

Crapo, Charles A. — 1983 — Assistant Professor of Seafood Technology (1983), SFOS/FITC, MAP. Oregon State University '74, B.S.; '83, M.S.

Crawford, Dennis L. — 1989 — Associate Professor of Extension 4-H (1989) and State 4-H Program Leader (1989), CES. Linfield College '55, B.A.; Colgate Rochester Divinity School '58, M.Div.; Oregon State University '67, M.Ed.; '76, Ph.D.

Creed, John — 1987 — Assistant Professor of General Studies and Journalism and Broadcasting (1989), CC/CRA. University of Massachusetts, Amherst '75, B.A.; University of Oregon '83, M.A.

Criddle, Keith R. —1989 — Assistant Professor of Economics (1989), SOM. California State University, Sacramento '82, B.S.; University of California, Davis '84, M.S.; '89, Ph.D.

Cridge, Edmund S. — 1977 — Associate Professor of Library Science (1983), LIB. State University of New York, Oswego '62, B.S.; State University of New York, Buffalo '66, M.S.; '70, M.Ed.; '77, Ed.D.

Crowder, R. Keith — 1983 — Assistant Professor of Geology (1983), CNS. Radford University '78, B.S; University of Arkansas '80, M.S.; University of Iowa '83, Ph.D.

Curda, Linda — 1991 — Community Health Aid Program Coordinator (1991), CRA. University of Maryland '71, B.S.N.; John Hopkins University '77 M.P.H. & C.N.M.

Currier, Janice — 1981 — Program Development Specialist, ANHRDP (1982), CRA. University of Northern Colorado '74, B.A.; California State University, Dominguez Hills '88, M.A.

Curtis, Kevin — 1988 — Assistant Professor of Civil Engineering (1988), SOE. Purdue University '80, B.S.C.E.; Colorado State University '85, M.S.C.E.; '88, Ph.D.

Cysewski, Stephen D. — 1991 — Assistant Professor of Computer Applications (1991), SCCE. Western Washington State University '67, B.A.; Alaska Pacific University '87, M.L.A.

Daly, John H. — 1990 — Associate Professor of Aviation (1990), SCCE. Texas A&M University '68, B.A.; University of Southern California '79. M.S.; U.S. Naval Postgraduate School '81, M.S.

Damron, Debra P. — 1991 — Public Information Officer (1991). University of Alaska Fairbanks '82, B.A.

Daro, Hazel Ewing — 1977 — Assistant to the Director, University of Alaska Museum (1986), UAM. University of Alaska Fairbanks '72, A.O.A.

Das, Deben K. — 1984 — Associate Professor of Mechanical Engineering (1988), SOE. Sambalpur University '72, B.S.; Brown University '74, Sc.M.; University of Rhode Island '83, Ph.D., P.E.

Davies, John — 1986 — State Seismologist (1987), GI; Affiliate Associate Professor of Geology (1987), CNS. Reed College '67, B.A.; University of Alaska Fairbanks '70, M.S.; '75, Ph.D.

Davis II, C.W. — 1990 — Facilities Engineer, VCA.

Davis, Frank — 1981 — Instructor of Culinary Arts, SCCE. Tanana Valley Community College '79, A.A.S., C.C.C., C.C.E.

Davis, Pamela M. — 1990 — Fund-raising Manager (1990). University of Georgia '78, B.S.

Dean, Frederick C. — 1954 — Professor of Wildlife Management (1966), CNS. University of Maine '50, B.S.; '52, M.S.; State University of New York '57, Ph.D.

Dean, Kenneson G. — 1977 — Research Assistant Professor, (1991) GI. Northern Arizona University '72, B.S.; University of Alaska '79, M.S.

Dearborn, Ronald K. — 1985 — Director, Alaska Sea Grant College Program (1985), SFOS/SG. University of Maine '65, B.S.; University of Massachusetts '75, M.S.; P.E.

DeBevec, Jackie — 1987 — Admissions Counselor (1989), STUAFF. University of Colorado, Boulder '84, B.A.

DeCorso, Theodore — 1974 — Professor of Music (1984), CLA. University of Connecticut '65, B.S.; The Juilliard School '67, M.S.; University of Connecticut '77, Ph.D.

Deehr, Charles S. — 1958 — Scientific Director, PFRR (1989), GI, and Professor of Physics, Emeritus. University of Alaska '68, Ph.D.

Dehghani, Kaveh — 1983 — Associate Professor of Petroleum Engineering (1989), SME. Abadan Institute of Technology '75, B.S.; University of Southern California '78, M.S.; '83, Ph.D.

Dehner, Ann E. — 1985 — Development Director, KUAC (1986), CLA. Indiana University '75, B.S.; '79, M.S.

Delana, Brett S. — 1975 — Senior Project Engineer (1986), GI. Oregon Tate University '71, B.S.E.E.; University of Alaska '73, M.S.

DeLisa, Susan — 1990 — Postdoctoral Fellow (1990), SFOS/IMS. Antioch College '74, B.S.; University of Alaska Fairbanks '79, M.S.; '89, Ph.D.

DeLodder, John — 1978 — Distance Education Coordinator (1987), KUC/CRA. Sacramento City College '65, A.A.; Humbolt State University '71, B.A.

Demmert, Dennis — 1974 — Associate Professor of Education (1987), CRA. Harvard University '72, Ed.M.

Desorcie, Doug — 1982 — Coordinator, Student Activities, Wood Center and Student Activities (1988), STUAFF. University of Alaska Fairbanks '85, B.S.; '87, M.S.

Desrochers, James L. — 1989 — Project Engineer (1989), GI. University of Alaska Fairbanks '88, B.S.

Deviche, Pierre — 1988 — Associate Professor of Zoophysiology (1987), CNS. University of Liege, Belgium '75, B.S.; '80, Ph.D.

Devlin, Liam C. — 1989 — Instructor of Community Health Aid Training (1989), KUC/CRA. University of State of New York '79, B.S.; Long Island University '85, M.S.

Dexter, Charles N. — 1985 — Director, Small Business Development Center (1989), SCCE; and Associate Professor of Applied Business (1990), SOM. University of Alaska Fairbanks '77, B.A.; '83, M.B.A.

DiCecco, Bruno — 1981 — Professor of Music (1991), CLA. Yale University School of Music, '57, B.M.; '58, M.M.

Dickerson, A. Amelia — 1988 — Instructional Coordinator (1988), NWC/CRA. B.A.; M.A.

Dickey, Terry P. — 1973 — Coordinator of Education and Public Service, UAM. (1976). University of Tulsa '66, B.A.; University of Alaska '87, M.Ed.

Dickson, Helen — 1988 — Distant Delivery Coordinator (1988), NWC/CRA. B.Ed.

Diehl, Carol S. — 1982 — Staff Counselor, Center for Health & Counseling, STUAFF and Assistant Professor of Counseling (1982), CRA. Juniata College '71, B.A.; West Virginia University '75, M.A.; '81, Ed.D.

Dieter, Emma R. — 1962 — Assistant Director for Coastal and Marine Operations (1982), SFOS/IMS. DePaul University '59, B.S.; University of Rhode Island '88, M.M.A.

Dieterich, Robert A. — 1967 — Faculty Associate (Emeritus) (1989), Professor of Veterinary Science (1967), IAB. University of California '61, B.S.; '63, D.V.M.

Dinges, Norman G. — 1990 — Associate Professor of Psychology and Director, Community Psychology Program (1990), CRA. Fort Hays State University '63, B.S.; '65, M.S.; Colorado State University '70, Ph.D.

Diseth, Scott S. — 1990 — Program Director/Station Manager KUAC-FM(1990), CLA. Fort Steilacoom Community College '71, A.A.

Distad, Jack — 1955 — Professor of Mathematics (1974) and Head, Department of Mathematical Sciences (1990), CLA. Montana State University '53, B.S.; '55, M.S.

Dixon, E. James — 1974 — Associate Professor of Archaeology (1982), Curator, Archaeology Collection (1974). UAM. University of Alaska '70, B.A.; '72, M.A.; Brown University '79, Ph.D.

Dofing, Stephen M. — 1989 — Assistant Professor of Agronomy (1989), SALRM. Kansas State University '78, B.S.; University of Nebraska '80, M.S.; '83, Ph.D.

Domnick, Gerald S. — 1984 — Coordinator of Yup'ik Language Center (1984), KUC/CRA. University of Alaska Fairbanks '84, B.A.

Douglas, Jim — 1984 — Associate Professor of Extension Resource Development and Youth Agent (1987), CES. University of Nevada Reno '70, B.S.; '74, M.S.

Doyle, John P. — 1967 — Professor of Fisheries (1981), SFOS/MAP. University of Washington '59, B.S.

Drew, James V. — 1976 — Dean, School of Agriculture and Land Resources Management; Director, Agricultural and Forestry Experiment Station, and Professor of Agronomy (1976). Rutgers University '52, B.S.; '57, Ph.D.

Dubbs, Patrick J. — 1968 — Associate Professor of Education and Head, Department of Rural Development (1982), CRA. University of Notre Dame '60, B.A.; Michigan State University '75, Ph.D.

Duff, John A. — 1980 — Professor of Music (1991), and Head, Department of Music, CLA. University of Washington '73, B.A.; B.Mus; Michigan State University '78, M.M.; '82, Ph.D.

Duffy, Lawrence K. — 1986 — Associate Professor of Chemistry and Biochemistry (1986), CNS, IAB. Fordham University '69, B.S.; University of Alaska '71, M.S.; '77, Ph.D.

Dunn, Veronica D. — 1990 — Visiting Assistant Professor of Extension, Home Economics (1990), CES. Eastern Michigan University '77, B.S.; University of Alaska Southeast '86, M.S.

Dupras, Joseph A. — 1979 — Professor of English (1990), CLA. University of Maryland '68, B.A.; State University of New York at Binghamton '70, M.A.; '75, Ph.D.

Dupras, Rheba — 1981 — Assistant Professor of Library Science (1981), LIB. Marietta College '73, B.A.; State University of New York at Binghamton '75, M.A.; University of Kentucky '79, M.S.L.S.

Durbrow, Mary M.S. — 1989 — Instructor of Community Health Aid Training (1989), KUC/CRA. University of Vermont '71, A.S.; University of California, Davis '82, Family Nurse Practitioner Certificate.

Dyen, Fred — 1981 — Associate Professor of Airframe and Powerplant/Aviation Technology, SCCE. Northrop University '76, Certificate; University of Santa Clara '70, B.A.; University of Alaska '86, M.S.

Ebbesson, Sven O.E. — 1985 — Professor of Marine Science and Neuroscience (1985), SFOS/IMS. Southwestern College '57, B.S.; University of Maryland '64, Ph.D.

Echelmeyer, Keith A. — 1984 — Assistant Professor of Geophysics (1987), GI, CNS. University of Colorado '76, B.S.; California Institute of Technology '79, M.S.; '83, Ph.D.

Edwards, Mary Elizabeth — 1989 — Assistant Professor of Geology (1989), CNS. Cambridge University '81, Ph.D.

Elder, Sarah M. — 1973 — Assistant Professor of Cinematography and Co-director of Alaska Native Heritage Film Project (1983), Sarah Laurence College '69, B.A.; Brandeis University '85, M.F.A.;

Eley, Thomas J. — 1990 — Assistant Professor of Rural Development and Field Coordinator (1990), CC/CRA. Humboldt State University, California '69, B.S.; '75, M.S.; University of California '85, M.A.; '88, Ph.D.

Ellanna, Linda J. — 1986 — Associate Professor of Anthropology (1988), CLA. University of Washington '66, B.A.; University of Wyoming '72, M.A.; University of Connecticut '83, Ph.D.

England, Gerald M. — 1964 — Director of Utilities Operation (1984), VCA. Southern Alberta Institute of Technology '63.

Ensign, Elaine C. — 1978 — Instructor of Mathematics (1981), CLA. Indiana University '53, B.A.; University of Wisconsin '55, M.S.

Ensign Jr., Walter G. — 1969 — Professor of Theatre and Drama (1984), CLA. University of Denver '66, B.A.; '67, M.A.

Ernst, Wendy — 1990 — Assistant Professor of Sculpture (1990), CLA. University of Minnesota '85, B.F.A.; The Ohio State University '90, M.F.A.

Esmailka, Wendy J. — 1978 — Instructor of Education and Director, Interior Campus (1988), CRA. SUC Buffalo '75, B.S.; Harvard University '78, M.Ed.

Esop, Jakub — Assistant Professor of Culinary Arts (1990), SCCE. Master Chef Degree of Marianske Lazne, Czechoslovakia '66

Estes, Steven A. — 1975 — Project Engineer, (1987) GI. University of Hawaii '72, B.S.E.E.; '74, B.S.; University of Alaska '78, M.S.

Evans, Melinda F. — 1986 — Physician, Center for Health and Counseling, (1986), STUAFF. Colorado College '73, B.A.; University of Washington '82, M.D., '86, A.B.I.M.; '90, M.P.H.

Fagen, Robert M. — 1982 — Associate Professor of Biometrics (1982), SFOS/JCFOS. Massachusetts Institute of Technology '67, B.S.; University of Michigan '68, M.S.; Harvard University '74, Ph.D.

Failoni, Daniel D. — 1975 — Affiliate Assistant Professor of Medical Science (1975), CNS. Western Reserve University '61, The Ohio State University '65, M.D., M.S.

Falk, Marvin W. — 1975 — Associate Professor of Library Science (1976), LIB. University of Minnesota '65, B.A.; University of Massachusetts '66, M.A.; University of Iowa '76, Ph.D.

Farkas, Connie G. — 1981 — Fiscal Officer, Physical Plant (1989), VCA.

Fay, Francis H. — 1970 — Professor of Marine Science (1983), SFOS/IMS. University of New Hampshire '50, B.S.; University of Massachusetts '52, M.S.; University of British Columbia '55, Ph.D.

Feist, Dale D. — 1971 — Professor of Zoophysiology (1983), IAB, CNS. University of Cincinnati '60, A.B.; University of California, Berkeley '69, Ph.D.

Fenton, Catherine M. — 1990 — Fiscal Officer (1990), SFOS. University of Wyoming '75, B.S.; '85, M.S.

Finch, Sheila — 1970 — Supervisor, Word Processing Center (1988), GI.

Finney, Bruce P. — 1970 — Assistant Professor of Marine Science (1990), SFOS/IMS. University of Minnesota '79, B.S.; Oregon State University '87, Ph.D.

Fitzgerald, Doreen — 1987 — Editor and Chief, Special Publications Office (1988), GI. Purdue University '75, B.S.

Florian, Dale A. — 1979 — Director of Public Safety Department (1979), VCA. Santa Rosa Junior College '72, A.A.; F.B.I. National Academy '74; University of Nevada, Las Vegas '79, B.A.

Florian, Eileen M. — 1980 — UAF Bookstore Manager (1987), STUAFF.

Flory, Alvin W. — 1990 — Assistant Professor of Extension and District 4-H Youth Development Agent (1990), CES. Kent State University '72, B.A.; Syracuse University '75, M.A.

Flynn, Mitch — 1980 — Fire Captain (1981), VCA. Tanana Valley Community College, A.A.S.

Fodness, Dale D. — 1990 — Assistant Professor of Business Administration (1990), SOM. University of Iowa '78, B.A.; University of South Dakota '83, M.B.A.; Florida State University '91, Ph.D.

Foley, Donald J.M. — 1991 — Director of Residence Life (1991), STUAFF. University of the Pacific '80, B.A.; Oregon State University '84, M.Ed.

Follmann, Erich H. — 1976 — Associate Professor of Zoology (1989), CNS, IAB. Loyola University, Chicago '65, B.S.; Southern Illinois University '68, M.A.; '73, Ph.D.

Foster, Nora Rakestraw — 1981 — Coordinator, Aquatic Collection (1981), UAM. University of Alaska Fairbanks '69, B.S.; '79, M.S.

Fowler, Albert W. — 1990 — Associate Professor of Library Science (1990), LIB. Haverford College '62, B.A.; Syracuse University '66, M.S.L.S.; Temple University '79, M.Ed.; '88, M.A.

Fox, John D. — 1973 — Assistant Professor of Land Resources (1973), SALRM. Trinity College '68, B.S.; University of Washington '70, M.S.; '76, Ph.D.

Fox, John F. — 1977 — Assistant Professor of Biometrics (1977), CNS, IAB. Johns Hopkins University '67, A.B.; University of Chicago '70, M.S.; '74, Ph.D.

Franks, Kyle — 1988 — Instructor of Education, Independent Learning Program (1988), CRA. Texas Midwestern University '55, B.A.; University of Alaska '64, M.Ed.; Welden University '81, M.S.

French, John S. — 1980 — Associate Professor of Seafood Biochemistry (1985), SFOS/FITC. Oberlin College '71, A.B.; University of Michigan '79, Ph.D.

Frentzen, Ann — 1983 — Acting Associate Dean (1987), SCCE; Assistant Professor of Anthropology (1987), Participant, Cross-Cultural Communications (1983), CLA. Macalester College '71, B.A.; School for International Training '75, M.A.; Teachers College, Columbia University '82, Ed.D.

Fritts, David C. — 1981 — Professor of Geophysics (1985), GI, CNS. Carleton College '71, B.A.; University of Illinois '73, M.S.; '77, Ph.D.

Gabrielli, Ralph B. — 1987 — Associate Professor of Education (1987), NWC/CRA. State University of New York / United States Military Academy (West Point), '65, B.A.; State University of New York '66, M.S.; Syracuse University '71, Ph.D.

Gaffney, Michael J. — 1974 — Associate Professor of Alaska Native Studies and Department Head (1979), CLA. San Francisco State College '63, B.A.; University of California at Los Angeles '68, M.A.; '73, Ph.D.

Gal, Robert — 1988 — Instructor of Social Sciences (1988), CC/CRA. University of Pennsylvania '68, A.B.; Brown University '73, M.A.

Gallagher, Thomas J. — 1984 — Associate Professor of Regional and Land Use Planning (1989), SALRM. University of Oregon '69, B.L.A.; University of Michigan '74, M.S.; '77, Ph.D.

Gangloff, Roland A. — 1987 — Associate Professor of Geology and Curator of Earth Science (1987), CNS, UAM. University of California, Berkely '61, B.S.; '63, M.S.; '75, Ph.D.

Gard, Richard — 1975 — Professor of Fisheries (1978), SFOS/JCFOS. University of California, Berkely '50, B.A.; '53, M.A.; '58, Ph.D.

Garnett, Lillian M. — 1990 — Linguist for Gwich'in Athabaskan (1990), CLA.

Garza, Dolly A. — 1983 — Marine Extension Agent and Assistant Professor of Fisheries (1983), SFOS/MAP. University of Alaska '80, B.S.; University of Washington: 83, M.S.

Gasbarro, Anthony F. — 1973 — Associate Professor of Forestry Extension (1986), CES. Colorado State University '62, B.S.; University of Alaska '79, M.S.

Gatterdam, Ronald W. — 1982 — Professor of Computer Science (1982), CLA. California Institute of Technology '61, B.S.; University of Southern California '65, M.A.; University of California, Irvine '70, Ph.D.

Gavlak, Raymond G. — 1989 — Associate Professor of Agronomy Extension (1989), CES. California State Polytechnic University '76, B.S.; Montana State University '82, M.S.; '85, Ph.D.

Gaylord, Thomas A. — 1990 — Associate Vice Chancellor (1990), PC&IS. University of Alaska Fairbanks '76, B.S.; University of Florida '77, M.S.; '80, Ph.D.

Geagel, Russell H. — 1988 — Site Manager, Kasitsna Bay Laboratory (1988), SFOS/IMS.

Geist, Charles R. — 1974 — Professor of Psychology (1984), CRA. University of San Diego '68, B.S.; University of Montana '73, M.A.; '75, Ph.D.

Gentry, Kathleen — 1989 — Instructor of Community Health Aid Training (1989), KUC/CRA. Webster University '68, B.A.; St. Louis University '77, P.A.; Lindenwood College '80, M.A.

George, Thomas H. — 1973 — Applications Specialist, (1973), GI. Oregon State University '73, B.S.; University of Alaska '85, M.S.

Gerlach, S. Craig — 1988 — Director, Alaska Quaternary Center (1989) and Assistant Professor of Quaternary Science (1989), UAM. University of Oklahoma '74, B.A.; '77, M.A.; Brown University '89, Ph.D.

Getz, Martin — 1982 — Instructor of Mathematics (1982), CLA. University of South Dakota '68, B.A.; University of Alaska Fairbanks '72, M.S.

Gharrett, Anthony J. — 1976 — Professor of Fisheries (1989), SFOS/JCFOS. California Institute of Technology '67, B.S.; Oregon State University '73, M.S.; '75, Ph.D.

Gieck, Robert E. — 1985 — Research Associate (1986), INE. University of Alaska-Fairbanks '82, B.S.; '86, M.S.

Gilmore, Perry — 1985 — Associate Professor of Education (1987) and Head, Education, Fairbanks Faculty (1990), CRA. Temple University '66, B.S.; '76, M.S.; University of Pennsylvania '82, Ph.D.

Gimbel, John G. — 1987 — Associate Professor of Mathematics (1990), CLA. Andrews University '77, B.S.; Western Michigan University '84, Ph.D.

Gislason, Gary A. — 1970 — Professor of Mathematics (1984), CLA. University of Alaska '66, B.S.; University of Oregon '68, M.S.; '70, Ph.D.

Gladden, James N. — 1985 — Associate Professor of Political Science/Justice (1991), CLA. Indiana University-Bloomington '72, B.A.; University of Houston, Texas '77, M.A. Indiana University-Bloomington '84, Ph.D.

Gleason, Thomas A. — 1990 — Accountant, Grant and Contract Services (1990), VCA. University of Alaska Fairbanks, B.B.A.; C.P.A.

Goering, Douglas J. — 1989 — Assistant Professor of Mechanical Engineering (1989), SOE. University of Washington, B.S.; University of Alaska Fairbanks, M.S.; University of California, Berkeley '89, Ph.D.

Goering, Gregory E. — 1990 — Assistant Professor of Economics (1990), SOM. University of Alaska '84, B.A.; '86, M.S.; Purdue University '88, M.S.; '90, Ph.D.

Goering, John J. — 1962 — Professor of Marine Science (1968) and Associate Director of IMS (1989), SFOS/IMS. Bethel College '56, B.S.; University of Wisconsin '60, M.S.; '62, Ph.D.

Gold, Carol — 1980 — Associate Professor of History (1983), CLA. Antioch College '64, B.A.; University of Wisconsin '67, M.A.; '75, Ph.D.

Gooding, Lawrence — 1974 — Adjunct Associate Professor of Sociology (1990), CRA. San Jose State University '65, B.A.; University of Oregon '72, M.A.; '76, Ph.D.; Oregon State University '82, M.S.

Goodwin, Cathy — 1989 — Assistant Professor of Business Administration (1989), SOM. Barnard College '65, A.B.; Wharton School '75, M.B.A.; University of California, Berkeley '86, Ph.D.

Gorham, Abby H. — 1977 — Marine Resource Economist (1977), SFOS/SG. University of Hawaii '69, B.A.; Temple University '72, M.A.; University of Rhode Island '77, Ph.D.

Gosink, Joan P. — 1979 — Associate Professor of Geophysics (1986), GI. Massachusetts Institute of Technology '62, B.S.; Old Dominion University '73, M.S.; University of California, Berkeley '79, Ph.D.

Graham, Charles E. — 1991 — Director, Office of Sponsored Programs (1991), VCR. University of Birmingham, England '60, B.S.; '64, Ph.D.; '88, D.Sc.

Graham, Jeffrey S. — 1989 — Affiliate Assistant Professor of Agronomy (1989), SALRM. University of Montana '79, B.S.; '83, M.S.; Oregon State University '89, Ph.D.

Gray, Andrew K. — 1990 — Research Associate (1990), SFOS/JCFOS. Washington State University '88, B.S.; '90, M.S.

Gregory, Gayle — 1984 — Graduation Manager (1988), STUAFF. University of Alaska Fairbanks '80, B.B.A.

Greenberg, Joshua A. — 1990 — Assistant Professor of Resource Economics (1990), SALRM. University of Connecticut '82, B.A.; University of Alaska Fairbanks '84, M.A.; Washington State University '90, Ph.D.

Greene, Barbara E. — 1990 — Visiting Assistant Professor of Extension, Nutrition (1990), CES. Florida Southern College '57, B.S.; Florida State University '62, M.S.; '66, Ph.D.; University of Alaska Fairbanks '88, M.S.

Greimann, Paul — 1979 — Assistant Professor of Diesel and Heavy Equipment, SCCE. University of Alaska '67, B.A.

Griffin, Marilynn — 1978 — Assistant to the Dean (1987), CNS. Alaska Methodist University '66, B.A.

Grove, Robert A. — 1970 — Assistant for Operations (1989), GI. Chico State University '69, B.A.

Grubis, Stephen F. — 1974 — Associate Professor of Cross-Cultural Education (1985), CRA. Bridgewater State College '66, B.A.; Alaska Methodist University '69, M.A.T.; University of Alaska '71, Ed.S.; Simon Fraser '80, Ph.D.

Guevera, Cindy — 1989 — Purchasing Agent (1989), VCA. University of Alaska Fairbanks, B.B.A.

Gunter, Pauline — 1979 — Assistant Professor of Library Science (1982), LIB. Wheaton College '66, B.A.; Columbia University '78, M.S.

Guthrie, R. Dale — 1963 — Professor of Zoology (1970), Associate Faculty of Anthropology (1987), CNS, IAB. University of Illinois '58, B.S.; '59, M.S.; University of Chicago '63, Ph.D.

Hagstrom, David — 1985 — Associate Professor of Education (1985), CRA. Grinnell College '57, B.A.; Harvard University '58, M.A.T.; University of Illinois '66, Ed.D.

Haldorson, Lewis J. — 1980 — Associate Professor of Fisheries (1984), SFOS/JCFOS. University of Minnesota '63, B.A.; University of California, Santa Barbara '73, M.A.; '78, Ph.D.

Hales, David A. — 1972 — Professor of Library Science (1988), LIB. Brigham Young University '66, B.S.; Drexel University '68, M.L.S.; University of Pennsylvania '72, M.A.

Hall, Hugh — 1987 — Theatre Technical Director (1987), CLA.

Hall, Terrance W. — 1990 — Head, Department of Military Science and Professor of Military Science (1990), CLA. California State University, Fullerton '74, B.A.; Western State University College of Law '77, J.D.

Hallinan, Thomas J. — 1965 — Professor of Geophysics (1991), GI, CNS. Cornell University '64, B.S.E.E.; University of Alaska '69, M.S.; '76, Ph.D.

Hallsten, DeAnne — 1981 — Associate Professor of Career Counseling, SCCE. Occidental College '60, B.A.; University of Oklahoma '75, M.A.

Hampton, Eber — 1986 — Assistant Professor of Education (1986), CRA. Westmont College '64, B.A.; Harvard Graduate School of Education '86, Ed.D.

Hampton, Mary — 1988 — Assistant Professor of Psychology (1988), CRA. Valparaise University '74, B.A.; Boston University '80, Ed.M.; Harvard University '86, Ed.D.

Hannigan, Michael — 1987 — Assistant Professor of Social Work (1989), NWC/CRA. University of Connecticut '73, B.A.; West Virginia University '77, A.C.S.W.

Hanson, Kathy — 1987 — Regional Adult Basic Education Director (1988), KUC/CRA. Drury College '72, B.A.

Harbaugh, John P. — 1988 — Assistant Professor of Music (1988), CLA. University of Northern Iowa '75, B.A.; North Texas State University '77, M.M.E.

Harding, Earlene — 1982 — Student Activities Coordinator (1990), KUC/CRA.

Harmon, Kevin "Kip" — 1988 — Assistant to the Athletic Director (1988), ATHREC. Southern Illinois University at Edwardsville '83, B.S.

Harrell, Anna Kathleen — 1989 — Director, Student Support Services (1989), CLA. University of Colorado '74, B.S.; University of LaVerne '88, M.P.A.

Harrington, Heather — 1991 — Adjunct Instructor of Civil Engineering (1991), SOE. Ft. Steilacoon Community College '81, A.A.S.; University of Alaska Fairbanks '84, B.S.C.E.; '86, M.S.C.E.

Harrison, William D. — 1972 — Professor of Physics (1982), GI, CNS. Mt. Allison University '58, B.Sc.; University of London '60, B.Sc. (Special); California Institute of Technology '66, Ph.D.

Harter, Charles — 1991 — Assistant Professor of Accounting Information Systems (1991), SOM. University of Nebraska-Lincoln '81, B.S.; University of Wyoming '85, M.S.; University of Nebraska-Lincoln '91, Ph.D.

Hartman, Charles W. — 1967 — Business Manager, (1978), CES/SALRM. Rutgers University '64, B.A.; University of Alaska '67, B.S.

Hartzignatiou, Dimitrios G. — 1990 — Visiting Assistant Professor (1991), SOM. National Technical University of Athens, Greece '82; University of Alaska Fairbanks '86, M.S.; University of Tulsa '90, Ph.D.

Hatfield, Susan E. — 1979 — Assistant to the Dean (1989), CLA.

Hawkins, Joseph G. — 1987 — Assistant Professor (1987), SOE. University of Alaska '82, B.S.; Stanford University '84, M.S.; '87, Ph.D.

Hazelton, Alexander E. — 1990 — Manager (1990), SFOS/JCFOS. Michigan State University '63, B.S.; Central Michigan University '68, M.A.; University of Florida '69, Ed.S.; '80, Ed.D.

Heflinger, David L. — 1988 — Electrical Engineer (1988), VCA. Massachusetts Institute of Technology '70, B.S.E.E.

Hegdal, Ian A. — 1986 — Telecommunications Engineer (1988), VCA. University of Alaska Fairbanks '78, B.S.E.E.

Helfferich, Carla A. — 1964 — Associate Editor and Science Writer (1988), GI. University of Alaska '65, B.A.

Helfferich, Merritt R. — 1966 — Associate Director for Administration, (1988), GI. University of Alaska '66, B.A.; Harvard University '90, M.P.A.

Helm, Dot — 1980 — Plant Synecologist (1982), AFES. (Palmer Research Center). University of Delaware '69, B.S.; University of Michigan '70, M.S.; Colorado State University '77, M.S.; '81, Ph.D.

Helms, Andrea R. C. — 1973 — Professor of Political Science/Justice (1985), CLA. University of Connecticut '65, B.A.; '66, M.A.; '68, Ph.D.

Henrichs, Susan M. — 1982 — Associate Professor of Marine Science (1987), SFOS/IMS. University of Washington '75, B.S.; Woods Hole Oceanographic Institution — Massachusetts Institute of Technology Joint Program '80, Ph.D.

Herlugson, Mary Lou — 1983 — Research Associate, Animal Science (1983). New Mexico Institute of Mining and Technology '74, B.S.

Herrmann, Mark L. — 1990 — Assistant Professor of Economics (1990), SOM. University of California at Davis '82, B.S.; '85, M.S.; Washington State University '90, Ph.D.

Heyne, Eric — 1986 — Assistant Professor of English (1986), CLA. University of Washington '78, B.A.; Ohio State University '82, M.A.; '84, Ph.D.

Highsmith, Raymond C. — 1983 — Associate Professor of Marine Science (1983), SFOS/IMS. University of Iowa '72, B.A.; University of Washington '79, Ph.D.

Himelbloom, Brian H. — 1987 — Assistant Professor of Seafood Microbiology (1987), SFOS/FITC. Northern Illinois University '78, B.S.; Louisiana State University '80, M.S.; North Carolina State University '85, Ph.D.

Hinman, Charles A. — 1988 — Analyst/Programmer (1989), PC&IS. Tanana Valley Community College '79, A.A.S.; University of Alaska Fairbanks '86, B.S.

Hinzman, Larry — 1990 — Post Doctorate Research Associate (1990), WRC. South Dakota State University '79, B.S.; Perdue University '81, M.S.; ; University of Alaska Fairbanks '90, Ph.D.

Hoch, Betty J. — 1973 — Director, Budget and Cost Records (1984), VCA.

Hoffman, David B. — 1985 — Professor of Business Administration (1985), SOM. Gannon University '68, B.B.A.; University of Alaska Anchorage '72, M.B.A.; Kent State University '76, D.B.A.

Hohman, George — 1990 — Coordinator of Partners in Employment (1990), KUC/CRA. Michigan State University '59, B.A.

Holleman, Dan Foy — 1969 — Radiobiologist (1969), CNS, IAB. Howard Payne College '61, B.S.; New Mexico Highlands '65, M.S.; Colorado State University '66, M.S.; '69, Ph.D.

Hollister, Robert A. — 1990 — Assistant Professor of Statistics (1990), CLA. University of Florida '63, B.S.; University of California-Berkeley '66, M.A.; University of Montana '84, Ph.D.

Holloway, Patricia S. — 1984 — Associate Professor of Horticulture (1989), SALRM. Millersville University '73, B.A.; Washington State University '76, M.S.; University of Minnesota '82, Ph.D.

Holzmueller, Michael — 1979 — Assistant Fire Chief (1981), VCA; Coordinator, Fire Science Program (1989), SCCE. Tanana Valley Community College '80, A.A.S.; University of Alaska Fairbanks '77, B.S.

Hopkins, David M. — 1985 — Distinguished Professor of Quaternary Studies (1985), CNS, Associate Faculty of Anthropology (1987). University of New Hampshire '42, B.S.; Harvard University '48, M.S.; '55, Ph.D.

Hopkins, John R. — 1979 — Assistant Professor of Music (1979), CLA. Beth College '69, B.A.; University of Iowa '76, M.A.; '82 D.M.A.

Hoskins, Leo Claron — 1965 — Professor of Chemistry (1975), CNS. Utah State University '62, B.S.; Massachusetts Institute of Technology '65, Ph.D.

Howard, Elizabeth A. — 1979 — Teaching Aide (1980), KUC/CRA.

Hsieh, Carol — 1985 — Budget Analyst (1986), VCA. Mills College '80, B.A.

Huang, Scott L. — 1981 — Professor of Geological Engineering (1991), SME. Cheng-Kung University, Taiwan, '74, B.S.; University of Kentucky, '78, M.S.; University of Missouri, Rolla, '81, Ph.D.

Hubalik, Nick E. — 1990 — Assistant Professor of Exercise and Sport Psychology (1990), CLA. St. Joseph's College '74, B.S.; '82, M.S.; '87, Ph.D.

Hulsey, J. Leroy — 1987 — Associate Professor of Civil Engineering (1987), SOE. Missouri School of Mines and Metallurgy '65, B.S.; University of Missouri-Rolla '66, M.S.; '76, Ph.D.

Husby, Fredric M. — 1975 — Professor of Animal Science (1991), SALRM. Washington State University '66, B.S.; '69, M.S.; '73, Ph.D.

Ideus, Katherine M. — 1990 — Deputy Director, Alaska Native Human Resource Development Program (1990), CRA. Utah State University '72, B.S.; '75, M.S.; University of Sourthern California '90, Ed.D.

Illingworth, Ronald D. —, 1980 — Instructor of Developmental Studies and Coordinator, Nenana Center (1988), IC/CRA. Iowa State University '64, B.S.; University of Nebraska '80, M.A.

Ittner, Dwight R. — 1975 — Librarian (1975), LIB. Fort Hays Kansas State College '65, B.S.; '67, M.S.; University of Arizona '71, M.L.S.

Jacobsen, Cynthia J. — 1989 — Visiting Assistant Professor of Education, Center for Cross-Regional Education Programs (1989), CRA. Western Montana College '68, B.A.; Montana State University ;85, M.S.; '88, Ed.D.

Jacobson, Steven A. — 1974 — Associate Professor of Yupik Eskimo (1984), CLA. University of California, Berkeley '66, B.A.; '71, M.A.

Jacobson, William C. — 1971 — Proposal Coordinator (1977), VCR. University of Alaska '58, B.A.

Jaffe, Daniel A. — 1987 — Assistant Professor of Chemistry (1987), CNS, GI. Massachusetts Institute of Technology '78, B.S.; University of Washington '83, M.S.; '87, Ph.D.

James, Jean Wadland — 1988 — Executive Officer, Institute of Arctic Biology (1988), IAB. Bowling Green State University '65, B.S.; University of Washington, Seattle '72, M.H.A.

Jeffries, Martin O. — 1985 — Research Associate Professor (1990), GI. University of Sheffield, England '79, B.A.; University of Manchester, England '81, M.S.; University of Calgary, Alberta, Canada '85, Ph.D.

Jevtic, Dusan B. — Assistant Professor of Computer Science (1987), CLA. University of Belgrade '75, B.S.; '81, M.S.; Santa Clara University '87, Ph.D.

Jewett, Stephen C. — 1974 — Research Associate (1980), SFOS/IMS. John Brown University '71, B.A.; University of Alaska '77, M.S.

Jiang, Tsang-Ming — 1988 — Assistant Professor of Computer Science (1988), CLA. National Taiwan University '82, B.S.; '84, M.S.; University of Illinois '88, Ph.D.

Johansen, Nils I. — 1971 — Associate Professor of Geological Engineering (1976), SME. Purdue University '66, B.S.C.E.; '67, M.S.C.E.; '71, Ph.D., P.E.

Johnson, Clara — 1983 — Adviser/Counseling, Rural Student Services (1983), STUAFF. University of Alaska Fairbanks '68, B.A.; Portland State University '73, M.S.W.

Johnson, Connie Jo — 1989 — Instructor of Health, Independent Learning Program (1989), CRA. Dakota Wesleyan University '80, BA; Washington State University '81, M.S.

Johnson, Daniel A. — 1989 — Director, Rural Alaska Health Education Center (1990), CRA. Minneapolis Community College '79, A.A.S; Saint Olaf College '71 B.A.; '76, B.A.

Johnson, James — 1974 — Professor of Music (1983), CLA. University of Arizona '70, B.M.; '72, M.M.; '76, D.M.A.; Westminster Choir College '86, M.Ch. Mus.

Johnson, Lawrence A. — 1988 — Program Manager (1989), INE. Brown University '69, Sc.B.; Harvard University '73, M.S.

Johnson, Lynn R. — 1987 — Director, Chukchi Campus (1988), Associate Professor of Social Sciences (1987), CC/CRA. Western Michigan University '71, B.S.; '77, M.A.

Johnson, Mark A. — 1989 — Assistant Professor of Marine Science (1991), SFOS/IMS. University of Miami '77, B.S; Texas A&M University '81 M.S.; '87, Ph.D.

Johnson, Ronald A. — 1976 — Professor of Mechanical and Environmental Quality Engineering (1985), and Head, Department of Mechnical Engineering (1987), SOE. Brown University '65, Sc.B.; Cornell University '66, M.S.; '69, Ph.D.; P.E.

Johnson, Terry L. — 1991 — Assistant Professor of Fisheries and Marine Extension Agent (1991), SFOS/MAP. University of Washington '74, B.A.; '84, M.S.

Johnston, Thomas F. — 1973 — Professor of Music (1981), CLA. California State University, Hayward '68, M.A.; California State University, Fullerton '72, M.A.; Witwatersrand University, Johannesburg '72, Ph.D.

Jones, Dorothy — 1974 — Associate Professor of Computer Applications, SCCE. Prairie View A&M College '68, B.S.; University of Alaska '77, M.Ed.

Jones, Matt — 1988 — Analyst Programmer, PC&IS. University of Alaska Fairbanks '88, B.S.

Jozwiak, Eric — 1976 — Director of Housing (1985), STUAFF. University of Alaska Fairbanks '75, B.S.; '77, M.Ed.

Jubenville, Alan — 1979 — Professor of Resource Management (1988), SALRM. North Carolina State College '62, B.S.; West Virginia University '64, M.S.; University of Montana '70, Ph.D.

Juday, Glenn Patrick — 1978 — Assistant Professor of Plant Ecology (1981), SALRM. Purdue University '72, B.S.; Oregon State University '76, Ph.D.

Kalinak, Ann — 1988 — Instructor of English, Independent Learning Program (1989), CRA.

Kamath, Vidyadhar A. — 1983 — Associate Professor of Petroleum Engineering (1990), SME. University of Bombay '80, B.S.; University of Pittsburgh '82, M.S.; '83, Ph.D.

Kamerling, Leonard J. — 1980 — Research Associate and Co-director of Alaska Native Heritage Film Project (1989), UAM. Franconia College '65, A.A.

Kan, Joseph R. — 1972 — Professor of Geophysics (1981), GI, CNS. Cheng-Kung University '61, B.S.; Washington State University '66, M.S.; University of California, San Diego '69, Ph.D.

Kane, Douglas L. — 1971 — Professor of Water Resources and Civil Engineering (1986) and Director of Water Resource Center, INE. University of Wisconsin '66, B.S.C.E.; '68, M.S.C.E.; University of Minnesota '75, Ph.D., P.E.

Kaplan, Lawrence D. — 1974 — Associate Professor of Linguistics (1984), CLA. University of California, Berkeley '72, B.A.; University of California, San Diego '74, M.A.; '79, Ph.D.

Kari, James M. — 1973 — Associate Professor of Linguistics (1984), CLA. University of California, Los Angeles '66, B.A.; Reed College '69, M.A.; University of New Mexico '73, Ph.D.

Karlsson, Meriam — 1988 — Assistant Professor of Horticulture (1988), SALRM. Swedish University of Agricultural Sciences '79, B.S.; Michigan State University '84, M.S.; '87, Ph.D.

Kastelic, Patty — 1983 — Coordinator for Student Affairs (1987) and Director of Advising Services, STUAFF. University of Illinois '64

Kawagley, Oscar — 1987 — Assistant Professor of Education and Field Coordinator (1987), CRA. University of Alaska Fairbanks '58, B.Ed.; '68, M.Ed.; '87, Ed.S.

Kawasaki, Koji — 1980 — Associate Professor of Geophysics, (1991), GI, CNS. University of California, Berkeley '60, B.A.; University of Alaska '67, M.S.; '71, Ph.D.

Keith, Kristen — 1988 — Assistant Professor of Economics (1988), SOM. University of Montana '81, B.A.; Ohio State University '84, M.A.; '89, Ph.D.

Keller, John W. — 1979 — Professor of Chemistry and Biochemistry (1991), CNS. Ohio State University '68, B.S.; University of Wisconsin '76, Ph.D.

Keller, Sue — 1983 — Editor, (1989), SFOS/SG. Ohio State University '63, B.S.; University of Wisconsin '78, M.S.

Kelley, John J. — 1971 — Director, Polar ice Coring Office (1989) and Associate Professor of Marine Science (1979), SFOS/IMS. Pennsylvania State University '58, B.S.; University of Nagoya, Japan '74, Ph.D.

Kelly, Brendan P. — 1982 — Research Associate (1982), SFOS/IMS. University of California, Santa Cruz '75, B.A.; University of Alaska '79, M.S.

Kelly, Terry — 1987 — Director of Purchasing (1988), VCA. University of Alaska Fairbanks '74, B.B.A.

Kendrick, Charles T. — 1990 — Associate Professor of Computer Science (1990), CLA. Seattle Pacific University '68, B.S.; Washington State University '71, Ph.D.

Kent, Larry K. — 1990 — Communications Engineer (1990), GI. University of Alaska '86, B.S.E.E.

Keskinen, Mary J. — 1984 — Associate Professor of Geology (1991), CNS. Smith College '73, B.A.; Stanford University '79, Ph.D.

Kessel, Brina — 1951 — Professor of Zoology (1959), Curator of Terrestrial Vertebrate Collection (1972), UAM. Cornell University '47, B.S.; University of Wisconsin '49, M.S.; Cornell University '51, Ph.D.

Keyes, W. Ronald — 1972 — Assistant to the Vice Chancellor for Student Affairs and Director, Wood Center and Student Activities (1985), STUAFF. Oregon College of Education '66, B.S.; Oregon State University '69, M.S.

Kienle, Juergen — 1965 — Professor of Geophysics (1983), GI,CNS. Swiss Federal Institute of Technology E.T.H., '64, Diploma; University of Alaska '69, Ph.D.

Kim, Madeleine — 1988 — Affiliate Professor of Philosophy (1988), CLA. University of Vienna, Austria '69, Ph.D.

Kinney, Thomas C. — 1983 — Associate Professor of Civil Engineering (1983), SOE. University of Washington '65, B.S.C.E.; '66, M.S.C.E.; University of Illinois '79, Ph.D.

Kirk, K. Leslie — 1989 — Instructor of Geography, Independent Learning Program (1989), CRA. University of Utah, B.S.; M.S.

Kirts, Carla A. — 1981 — Associate Professor of Agricultural Education (1991), SALRM. Virginia Polytechnic Institute and State University '76, B.S.; '77, M.S.; University of Missouri-Columbia '81, Ph.D.

Klein, David R. — 1962 — Professor of Wildlife Management (1969), IAB. University of Connecticut '51, B.S.; University of Alaska '53, M.S.; University of British Columbia '63, Ph.D.

Kleinfeld, Judith S. — 1969 — Professor of Psychology (1978), CRA. Wellesley College '66, B.A.; Harvard University '67, Ed.M.; '69, Ed.D.

Kleven, Bonnie — 1983 — Buyer (1988), VCA.

Kline, Bridget G. — 1987 — Student Services Coordinator (1987), KUC/CRA. College of Great Falls '70, B.S.

Knavel, Brenda S. — 1979 — Assistant Professor of Library Science (1984), LIB. Shippensburg State College '76, B.S.; Western Michigan University '78, M.S.L.

Knight, Charles W. — 1978 — Assistant Professor of Agronomy (1978), SALRM. Kansas State University '70, B.S.; '71, M.S.; University of Alaska Fairbanks '88, Ph.D.

Knobel, Marsha D. — 1983 — Financial Aid Advisor (1984), STUAFF. Kearney State College '61, B.A.; University of Alaska Fairbanks '82, M.S.

Knoke, Peter J. — 1988 — Associate Professor of Computer Science (1988), CLA. Dartmouth College '55, B.A.; '56, M.S.E.E.; Syracuse University '68, Ph.D.; P.E.

Knox, Jr., Jo — 1987 — Manager of Academic Computing (1990), PC&IS.

Koester, Rebecca — 1975 — Admissions Manager (1988), STUAFF. Marylhurst College '70, B.A.; University of Alaska Fairbanks '75, A.A.

Koo, John H. — 1969 — Professor of Linguistics, Japanese and Korean (1982), CLA. Tongkook University (Korea) '56, B.A.; '58, M.A.; University of Texas '65, M.A.; Indiana University '70, Ph.D.

Koushki, Parviz A. — 1987 — Associate Professor of Civil Engineering (1991), SOE. University of Azarbaijon '65, B.S., M.S.; University of Wisconsin '74, Ph.D.

Kowalik, Zygmunt — 1981 — Professor of Marine Science (1989), SFOS/IMS. Moscow University '61, M.S.; Institute of Water Engineering, Polish Academy of Sciences, Gdansk '65, Ph.D.

Kowalsky, James Edward — 1986 — Director, Rural Alaska Honors Institute (1986), CLA. University of Wisconsin, Madison '57, B.M. '63, M.M.

Kozycki, Lawrence V. — 1982 — Machine Shop Supervisor (1982), GI.

Kramer, Donald E. — Director, Marine Advisory Program, Professor of Fisheries (1984), Seafood Technology Specialist (1980), SFOS/MAP. Ohio State University '60, B.S.; University of California, Davis '62, M.A.; '67, Ph.D.

Krauss, Michael E. — 1960 — Director, Alaska Native Language Center; Head, Alaska Native Language Program; Professor of Linguistics (1968), CLA. University of Chicago '53, B.A.; Western Reserve University '54, B.A.; Columbia University '55, M.A.; University of Paris '56, Certificat d'Etudes Superieures; Harvard University '59, Ph.D. Baccalaureatus Philologiae Islandicae, Haskoli Islands, '60.

Krejci, Rudolph W. — 1960 — Professor of Philosophy (1969), CLA. Leopold Franzens Universitat, Innsbruck '59, Ph.D.

Krieg, Kenneth — 1981 — Associate Professor of Animal Science Extension (1986), CES. University of Missouri '64, B.S.; '65, M.S.

Kuehn, Kelsey L. — 1990 — Athletic Trainer (1990), ATHREC. University of Alaska Fairbanks '83, B.S.; United States Sports Academy '84, M.S.

Kuhns, Chuck — 1978 — Captain, Fire Department (1981), VCA. University of Alaska '80, A.A.S.

Kuykendall, Jo — 1984 — Visiting Assistant Professor of Early Childhood (1988), SCCE. Oregon State University '64, B.S.; University of Southern California '86, Ed.D.

Kwachka, Patricia — 1979 — Associate Professor of Cross-Cultural Communications and Alaska Native Studies (1987) and Program Head, Cross-Cultural Communications (1990), CLA. University of Florida, Gainsville '64, B.A.; '70, M.A.; '82, Ph.D.

LaBerge, MaryEllen — 1988 — Acting Director of Alaska Teacher Placement (1990), STUAFF. University of Alberta '69, B.P.E.

Lachlan, Elaine — 1990 — Child Welfare Instructor (1990), CC/CRA. University of Arkansas '78, B.A.; University of Washington '80, M.S.W.

Lake, Gretchen L. — 1970 — Assistant Professor of Library Science (1985), LIB. Orange Coast College '74, A.A.; University of Alaska Fairbanks '74, B.A.; Western Washington University '78, Certificate in Archives and Records Management; '78, M.A.; University of Michigan '79, A.M.L.S.

Lamb, Lonny — 1965 — Superintendent of Custodial Services, VCA.

Lambert, John P. — 1982 — Associate Professor of Mathematics (1987), CLA. University of Cincinnati '64, B.S.; University of New Mexico '68, M.A.; Claremont Graduate School '82, Ph.D.

Lamie, Philip — 1987 — Assistant Professor of Art (1987), CLA. Herron School of Art '84, B.F.A.; Ohio State University '86, M.F.A.

Lamoreaux, Dennis W. — 1980 — Superintendent (1989), VCA. A.A.

Lando, Clifton A. — 1969 — Associate Professor of Mathematics (1973), and Associate Dean (1988), CLA. Lehigh University '62, B.A.; Rutgers University '64, M.S.; '69, Ph.D.

LaPerriere, Jacqueline D. — 1972 — Associate Professor of Fisheries and Assistant Leader, Alaska Cooperative Fishery Research Unit (1985), IAB; Associate Professor of Water Resources (1985), CNS, IAB. University of Massachusetts '64, B.S.; Iowa State University '71, M.S.; '81, Ph.D.

LaRoe, Daniel J. — 1986 — Analyst/Programmer (1987), PC&IS.

Larsen, Dinah Wolfe — 1967 — Coordinator of Ethnology (1983), UAM. University of Iowa '61, B.A.; University of California, Los Angeles '75, M.A.

Larson, Warren — 1974 — Associate Professor of Extension, Land Resource Development (1985), CES. University of Minnesota '68, B.S.; '74, M.S.; North Dakota State University '89, Ph.D.

Lashbrook, G. Lynn — 1988 — Director of Athletics (1988), ATHREC. Fort Hays State University '70, B.S.; Springfield College '71, M.S.; University of Northern Colorado '78, Ed.D.

Laur, David R. — 1990 — Research Associate (1990), SFOS/JCFOS. University of California (Santa Barbara) '73, B.A.; '89, Ph.D.

Laurion, David — 1985 — Assistant Hockey Coach and Assistant Arena Manager (1985), ATHREC. Notre Dame '82, B.B.A.

Laursen, Gary A. — 1976 — Adjunct Associate Professor of Mycology (1980), CNS,SALRM. Western Washington State University '65, B.A.; University of Montana '70, M.S.; Virginia Polytechnic Institute and State University '75, Ph.D.

Lay, J. Stephen — 1989 — Editor and Information Specialist (1989), SALRM. Trinity University '69, B.A.; Ohio State University '88, M.A.

Layer, Paul W. — 1989 — Assistant Professor of Geophysics (1989), CNS, GI. Michigan Sate University '81, B.S.; Stanford University '84, M.S.; '86, Ph.D.

Leaphart, Geraldine M. — 1977 — Financial Aid Advisor (1988), STUAFF. Tanana Valley College '87, A.A.S.

Lecomte, Serge — 1979 — Associate Professor of Russian (1986), CLA. University of Alabama '70, B.A.; Vanderbilt University '71, M.A.; '74, Ph.D.

Lee, Jonah Y. H. — 1984 — Associate Professor of Mechanical Engineering (1989), SOE. Chung Yuan College '73, B.S.; South Dakota School of Mines and Technology '79, M.S.; Iowa State University '83, Ph.D.

Lee, Jong S. — 1982 — Director of Fishery Industrial Technology Center and Professor of Food Science (1982), SFOS/FITC. University of California Berkeley '58, A.B.; Oregon State University '62, M.S.; '63, Ph.D.

Lee, Lou-Chuang — 1978 — Professor of Physics (1986), GI, CNS. National Taiwan University '69, B.S.; California Institute of Technology '72, M.S.; '75, Ph.D.

Lee, Richard — 1985 — Assistant Men's Basketball Coach (1985), ATHREC. University of Alaska Fairbanks '74, B.Ed; '83, M.Ed.

Leer, Jeffry A. — 1976 — Instructor, Alaska Native Language Center (1987), CLA. Evergreen State College '76, B.A.; University of Chicago '87, M.A.

LeFevbre, Christine — 1990 — Nursing Prep. Asst. (1990), KUC/CRA. Austin Peay State University, A.D.

Lehman, John A. — 1987 — Professor of Management Information Systems (1991), SOM. University of Michigan '72, B.A.; '73, M.A.; '77, M.B.A.; 81, Ph.D.

Lehman, Lisa M. — 1988 — Visiting Assistant Professor of Library Science (1989), LIB. University of Michigan '73, B.A.; '74, M.L.S.

Leipzig, John S. — 1982 — Associate Professor of Speech Communication (1988), CLA. Western Michigan University '69, B.A.; University of South Florida '74, M.A.; Kent State University '80, Ph.D.

Leitgeb, Kathleen — 1990 — Coordinator, UAF Elderhostel (1990), CLA. University of Alaska Fairbanks '74, B.A.

Lewis, Carol E. — 1973 — Associate Professor of Resource Management (1979), SALRM. University of Florida '62, B.S.; '64, M.S.; Georgetown University '71, Ph.D.; University of Alaska '76, M.B.A.

Li, Shusan — 1990 — Research Assistant Professor of Geophysics (1990), GI. Peking University '66, B.A.; University of California, Santa Barbara '82, M.A.; '85, Ph.D.

Lin, Chuen-Sen — 1990 — Assistant Professor of Mechanical Engineering (1990), SOE. National Taiwan University of Oceanic Science '72, B.S.; University of Hawaii '78, M.S.; University of Minnesota '88, Ph.D.

Lin, Hsing Kuang — 1986 — Assistant Professor of Hydrometallurgy (1987), SME. National Cheng Kung University '74, B.S.; University of Alaska Fairbanks '80, M.S.; University of Salt Lake City '85, Ph.D.

Lincoln, Tamara P.K. — 1976 — Associate Professor of Library Science (1986) and Affiliate Professor of Russian, LIB. University of Illinois '61, B.F.A.; '64, M.A.; Northern Illinois University '76, M.L.S.

Lindahl, Mary — 1986 — Associate Professor of Business Administration (1987), SOM. Augustana College '72, B.A.; University of Illinois at Urbana-Champaign '74, M.S.; '75, Ph.D.

Lindgren, Pat — 1989 — Purchasing Agent (1989), VCA.

Lingle, Craig S. — 1990 — Research Associate Professor (1990), GI. University of Washington '67, B.S.; University of Maine at Orono '78, M.S.; University of Wisconsin at Madison '83, Ph.D.

Linsalata, Mark — 1990 — Assistant Professor of Journalism and Broadcasting (1990), CLA. Antioch College '73, B.A.; Columbia University '76, M.S.

Lipka, Jerry M. — 1981 — Associate Professor of Education (1988) and Field Coordinator for the Cross-Cultural Education Development Program (1981), CRA. City College, New York, '66, B.B.A.; '69, M.B.A.; University of Massachusetts, Amherst '80, Ph.D.

Lium, Marie — 1983 — Associate Professor of English (1987), CLA. University of Washington '72, B.A.; Vermont College '84, M.F.A.; University of Cambridge, '87, M.Phil.

Logan, Robert — 1986 — Assistant Professor of Economics (1987), SOM. University of Iowa '80, B.S.; '86, Ph.D.

Lokken, Donald A. — 1970 — Associate Professor of Chemistry (1975), CNS. University of Wisconsin '63, B.A.; Iowa State University '70, Ph.D.

London, Bridget — 1989 — Instructor of Education, Independent Learning Program (1989), CRA. Seattle University '81, B.Ed.

Long, Dennis B. — 1987 — Director of Career Services (1990), STUAFF. Northern Montana College '73, B.S., U.T.E.; University of Alaska Fairbanks '88, M.Ed.; C.S.P.A.

Long, Vern — 1987 — Fire Chief, Fire Department (1987), VCA. A.A.S.

Lou, Yu-Qing — 1989 — Research Assistant Professor (1989), GI. Northern Jiao-Tong University '82, B.E.; Harvard university '83, M.A.; '87, Ph.D.

Lu, Cary M. — 1966 — Director, Grant and Contract Services/Accounting and Business Operations (1980), VCA. Chung Chi College '61, B.A.; University of Alaska '64, B.B.A.; '69, M.B.A.

Lucia, Donald — 1983 — Hockey Coach/Arena Manager (1987), ATHREC. Notre Dame '81, B.B.A.

Lull, Janis — 1986 — Associate Professor of English (1989), CLA. University of Oregon '67, B.A.; University of Minnesota '82, M.A.; '83, Ph.D.

Luong, Huan — 1978 — Research Associate (1987), INE. University of Alaska Fairbanks '76, B.S.

Lynch, Donald F. — 1970 — Professor of Geography (1975), CLA. Yale College '52, B.A.; Yale University '65, Ph.D.

Machida, Richard — 1984 — Telecommunications/Network Manager (1990), VCA. California State Polytechnic University-Pomona '80, B.S.

MacLean Jr., Stephen F. — 1971 — Professor of Zoology (1980), IAB, CNS, and Director of International Programs (1990). University of California, Santa Barbara, '64, B.A.; University of California, Berkeley '69, Ph.D.

Madonna, James A. — 1973 — Associate Professor of Mining Extension (1986), and Head, Department of Mineral Exploration and Mining Technology (1989), SME. Victor Valley Junior College '69, A.S.; Humboldt State College '71, A.B.; University of Alaska '73, M.S.

Madsen, Eric C. — 1983 — Assistant Professor of Education and Field Coordinator, Cross-Cultural Education Development Program (1983), CRA. Kalamazoo College '68, B.A.; University of Alaska Fairbanks '79, M.A.T.; University of Oregon '83, Ph.D.

Maginnis, Tara — 1990 — Assistant Professor of Theatre (1991), CLA. San Francisco State University '81, B.A.; California State University Fresno '85, M.A.; University of Georgia '91, Ph.D.

Mangusso, Mary — Instructor of History, Independent Learning Program (1989), CRA.

Mansfield, James T. — 1987 — Associate Director of Admissions and Records (1987), STUAFF. Northern Michigan University '61, B.S.; '64, M.A.

Marenin, Otwin — 1987 — Associate Professor of Political Science and Justice (1988), CLA. Northern Arizona University '66, B.S.; University of California-Los Angeles '67, M.A.; '73, Ph.D.

Mark, Chester — 1990 — Instructor of Community Health Aid Training (1990), KUC/CRA. San Franciso State University '84, B.S.; Stanford University '83, P.A.

Marshall, Dianne L. — 1987 — Instructor of Accounting Information Systems (1989), SOM. University of Alaska Fairbanks '82, B.B.A.; '83, A.A.; '86, M.B.A.

Marshall, George — 1990 — Instructional Program Specialist (1990), KUC/CRA. University of Oregon '68, B.S.; '76, M.S.

Martin, JoAnne — 1972 — Associate Professor of Extension, Home Economics (1988), CES. Friends University '55, B.A.; Ohio State University '66, M.S.

Martin, Joyce — 1991 — Program Development Specialist (1991), KUC/CRA. Adams State College, B.A.; M.A.

Martin, Wanda — 1984 — Director, Advising Center (1987), STUAFF. Portland State University '68, B.S.; '69, M.S.T.; Oregon State University '76, Ed.D.

Martinez, Raymond L. — 1990 — Launch Officer, PFRR (1990), GI.

Martz, Cecilia — 1983 — Assistant Professor of General Studies and Cross-Cultural Education (1974), KUC/CRA. University of Alaska Fairbanks '72, B.Ed.; '80, M.Ed.

Marum, Laurie K. — 1987 — Assistant Professor of Social Work (1974), IC/CRA. University of Washington '79, B.A.; University of Denver '80, M.S.W.

Mason, Charles W. — 1990 — Assistant Professor of Photojournalism (1990), CLA. Washington and Lee University '84, B.S.; Illinois State University '88, M.S.

Mathisen, Ole A. — 1982 — Professor of Fisheries (1982), SFOS/JCFOS. University of Oslo '45, Cand. real.; University of Washington '55, Ph.D.

Mayer, Charles E. — 1989 — Assistant Professor of Electrical Engineering (1989), SOE. University of Texas at Austin '78, B.S.E.E.; '81, M.S.E.; '83, Ph.D.

Mayes, Brigitte R. — 1966 — Records Manager (1984), STUAFF.

McBeath, Gerald A. — 1976 — Professor of Political Science (1980), CLA, and Director of Faculty Development (1990), VCAA. University of Chicago '63, B.A.; '64, M.A.; University of California, Berkeley '70, Ph.D.

McBeath, Jenifer H. — 1977 — Associate Professor of Plant Pathology Biotechnology (1986), SALRM. (1980). National Taiwan University '68, B.S.; University of California, Davis '70, M.S.; Rutgers University '74, Ph.D.

McCalley, Kevin — 1990 — Programmer, Physical Plant (1990), VCA.

McCarthy, Paul H. — 1964 — Director of Libraries (1988), Professor of Library Science (1977), LIB. St. John Fisher College '62, B.A.; Syracuse University '64, M.L.S.

McCauley, Laura Lee — 1989 — Associate Director (1990), CGCASR.

McFadden, Terry — 1974 — Associate Professor of Mechanical and Arctic Engineering (1983), SOE. Brigham Young University '60, B.E.S.M.E.; Stanford University '65, M.S.M.E.; University of Alaska '74, Ph.D., P.E.

McGowen, Michael G. — 1990 — Assistant Professor of Fire Science (1990), SCCE. University of Alaska Fairbanks '75, B.S.; '82, A.A.S.; '89, A.A.S.; State of Alaska '82, Master Fire Training Instructor Certificate.

McHenry, Susan I — 1972 — Adviser/Counseling, Rural Student Services (1973), STUAFF. University of Alaska '70, B.A.; '76, M.Ed.

McInnis, Susan E. — 1986 — Producer, KUAC-FM (1990), CLA. University of Alaska Fairbanks '76, B.A.

McIntosh, Douglas J. — 1976 — Research Associate (1976), SFOS/IMS. University of California, Berkeley '61, B.S.

McKendrick, Jay D. — 1972 — Professor of Agronomy (1989), SALRM. (Palmer Research Center). University of Idaho '63, B.S.; '66, M.S.; Kansas State University '71, Ph.D.

McKibben, Bruce — 1981 — Project Engineer (1984), GI. Oregon State University '81, B.S.C.E.

McNutt, Joni G. — 1986 — Manager, Wood Center Pub (1986), STUAFF. University of Alaska Fairbanks '87, B.A.

McRoy, C. Peter — 1967 — Professor of Marine Science (1979), SFOS/IMS. Michigan State University '63, B.S.; University of Washington '66, M.S.; University of Alaska '70, Ph.D.

McWayne, Barry J. — 1970 — Coordinator of Photography (1984), UAM.

Mellor, Morna — 1970 — Supervisor, GI Computing Services (1987), GI. West Chester State College '70, B.S.

Melteff, Brenda — 1974 — Coordinator (1983), SFOS/SG.

Mendenhall, Nancy — 1988 — Campus Director, Northwest Campus and Instructor of General Studies (1988), NWC/CRA. University of Washington '61, B.A.; Western Washington University '69, M.A.

Mendenhall, Perry T. — 1983 — Instructor of Education and Field Coordinator, Cross-Cultural Education Development Program (1983), CRA. Central Bible College '68, B.A.; University of Alaska Fairbanks '72, B.Ed.; University of Oregon '80, M.Ed.

Mercy, Deborah A. — 1986 — Instructional Media Specialist (1986), SFOS/MAP. University of Washington '76, B.F.A.

Merritt, Darrellyn — 1989 — Director, Alaska Marine Highway Program/UAF Elderhostel (1989), CLA. Stanford University '58, B.A.; '60, M.A.

Merz, Lorna — 1990 — Director of Employee Relations (1990), VCA. Mundelein College Chicago '80, B.A.; Aurora University '83, M.S.

Metz, Paul A. — 1975 — Assistant Professor of Geological Engineering, (1983), SME. Michigan Tech University '68, B.S.; University of Alaska '72, M.B.A.; '75, M.S.

Michaelson, Gary J. — 1975 — Research Associate in Agronomy (1983), AFES (Palmer Research Center). University of Arizona '75, B.S.; Iowa State University '81, M.S.

Miller, John M. — 1958 — Operations Manager, Alaska SAR Facility (1987), GI. University of Alaska '60, B.S.; '68, M.S., P.E.

Miller, L. Keith — 1960 — Senior Research Associate (1987), IAB. University of Nevada '55, B.S.; '57, M.S.; University of Alaska '66, Ph.D.

Miller, Susan — 1990 — Career Counselor (1990), STUAFF, University of Tennessee, Martin '75, B.S.; Memphis State University '87, M.S.

Million, Richard P. — 1980 — Computer Systems Manager (1980), GI. Columbia University '61, B.S.E.E.; Whitman College '61, B.A.

Milner, Laura M. — 1986 — Assistant Professor of Business Administration (1986), SOM. University of Georgia '75, B.A.; Kansas State University '81, M.S.; '85, Ph.D.

Mitchell, Francis — 1983 — Assistant Professor of Extension and District Extension Agent (1983), CES. College of Great Falls Montana '58, B.A.; Whitworth College '75, M.A.

Mitchell, G. Allen — 1987 — Associate Dean, School of Agriculture and Land Resources Management; Associate Director, Agricultural and Forestry Experiment Station (1987), SALRM. University of California, Riverside '71, B.S.; '73, M.S.; '77, Ph.D.

Moessner, Victoria J. — 1981 — Associate Professor of German (1987), CLA. Indiana University, '59, A.B.; University of Michigan, '63, M.A.; '71, Ph.D.; '81, A.M.L.S.

Mohatt, Gerald V. — 1983 — Professor of Psychology; Dean, Rural College (1987); and Director, Center for Cross-Cultural Studies (1983). St. Louis University '66, B.A.; '68, M.S.; Harvard University '78, Ed.D.

Montoya, Valerie C. — 1986 — Assistant Professor of Sociology (1986), CRA. Brigham Young University '80, B.S.; Stanford University '83, M.A.

Morack, John L. — 1968 — Professor of Physics (1978), CNS. Union College '61, B.S.; Oregon State University '68, Ph.D.

Morgan, Charlotte — 1979 — Research Associate (1987), PC&IS. University of Alaska Fairbanks '87, B.A.

Morgan, John — 1976 — Professor of English (1984) and Head, Department of English (1988), CLA. Harvard University '65, A.B.; University of Iowa '67, M.F.A.

Morgan, Joli — 1976 — Associate Professor of Business Education (1987), KUC/CRA. University of the State of New York '81, B.S.; Clarkson College '81, M.B.A.

Morgan, Lael — 1988 — Assistant Professor of Photojournalism (1988), CLA. Boston University, '59, '87 M.S.

Morris, Karen J. — 1980 — Sports Information Director and Assistant to Athletic Director (1987), ATHREC. SUNY Brockport '65, B.S.; Ithaca College '75, M.S.

Morrison, Joy F. — 1990 — Assistant Professor of Mass Communications (1990), CLA. New Mexico State University '83, B.S.; '85, M.S.; University of Iowa '90, Ph.D.

Morrow, Phyllis — 1987 — Assistant Professor of Anthropology and Cross-Cultural Communications (1987), CLA. Harvard-Radcliffe '72, B.A.; Cornell University '76, M.A.; '87, Ph.D.

Morton, Jeanette — 1987 — Instructor of Rural Development (1987), NWC/CRA. Arizona State University '71, B.S.; Central Michigan University '76, M.S.

Mosley, Larry — 1988 — Purchasing Agent (1989), VCA. University of Alaska, B.S.

Mueller, George S. — 1981 — Research Analyst, School of Engineering (1982), SOE. Golden State University '78, B.S.

Mull, Charles G. (Gil) — 1984 — Affiliate Assistant Professor of Geology (1984), CNS. University of Colorado '57, B.A.; '60, M.S.

Mulligan, George A. — 1985 — Associate Professor of Electrical Engineering (1985), SOE. Manhattan College '65, B.E.E.; Rensselaer Polytechnic Institute '67, Master of Engineering; '80, Doctor of Engineering; P.E.

Munly, Walter C. — 1990 — Research Associate (1990), SME. Portland State University '80, B.S.; Pennsylvania State University '84, M.S.

Murphy, Edward C. — 1983 — Associate Professor of Zoology (1987), CNS, IAB. University of California, Berkeley '70, B.A.; University of Alaska Fairbanks '74, M.S.; University of Kansas '77, Ph.D.

Murphy, Kathleen — 1989 — Counselor (1989), KUC/CRA. University of Wisconsin '78, B.S.; '88, M.S.E.

Murphy, Nancy — 1989 — Assistant Professor of Education (1989), CRA. University of Colorado '73, B.A.; University of Alaska Fairbanks '78, M.A.T.; Boston University '87, Ed.D.

Murray, David F. — 1969 — Professor of Botany (1978), CNS and Curator, Herbarium (1970), UAM. Middlebury College '59, A.B.; University of Alaska '61, M.S.; University of Colorado '66, Ph.D.

Murray, John A. — 1988 — Assistant Professor of English (1988), CLA. University of Denver '88, M.A.

Murrell, William Gregory — 1983 — Assistant Professor of Education and Field Coordinator, Cross-Cultural Education Development Program (1983), CRA. Virginia Commonwealth University '72, B.A.; University of New Mexico '74, M.A.; '79, Ph.D.

Musgrave, David L. — 1988 — Assistant Professor of Marine Science (1988), SFOS/IMS. California Institute of Technology '74, B.S.; University of Alaska '78, M.S.; '83, Ph.D.

Nageak, James — 1987 — Instructor of Inupiaq Eskimo (1987), CLA. University of Alaska Fairbanks '73, B.A.; University of Dubuque Theological Seminary '76, M.Div.

Naidu, A. Sathy — 1969 — Professor of Marine Science (1986), SFOS/IMS. Andhra University '59, B.S.; '60, M.S.; '68, Ph.D.

Nakazawa, Anthony — 1981 — Associate Professor of Community Development Extension (1987), CES. University of Hawaii '71, B.A.; University of California, Santa Barbara '74, M.A.; University of California, Berkeley '76, M.S.; '79, Ph.D.

Naragon, Dwain — 1988 — Assistant Professor of Art (1988), CLA. University of Wisconsin-Green Bay '74, B.A.; Arizona State University '81, M.F.A.

Naske, Claus-M. — 1965 — Professor of History (1981) and Head, Department of History (1986), CLA. University of Alaska '61, A.B.; University of Michigan '64, M.A.; Washington State University '70, Ph.D.

Nebert, David L. — 1969 — Research Associate (1971) and Assistant Director for Research and Administration (1990), SFOS/IMS. Portland State University '65, B.S.; University of Alaska '72, M.S.

Nelson, Frank — 1990 — Adjunct Assistant Professor of Psychology (1990), CRA. California State University, Northridge '69, B.A.; University of Southern California '73, M.A.; '75, Ph.D.; California School of Professional Psychology '83, Ph.D.

Nelson, Michael G. — 1989 — Assistant Professor of Mining Engineering, (1989), SME. University of Utah, '75, B.S.; '83, M.S.; West Virginia University, '89, Ph.D.

Nestor, Ralph W. — 1974 — Associate Professor and Head, Travel Industry Management Program (1974), SOM. Cornell University '61, B.A.; '66, B.S.; '70, M.S.

Newberry, Rainier J. — 1982 — Associate Professor of Geology (1986), CNS. Massachusetts Institute of Technology '75, B.S. Chemistry, B.S. Geology; Stanford University, '78, M.S.; '80, Ph.D.

Nicholson, Pam — 1989 — Purchasing Agent (1990), VCA.

Niebauer, H. Joseph — 1976 — Professor of Marine Science (1982), SFOS/IMS. University of Wisconsin, Madison '67, B.S.; '76, Ph.D.

Nielsen, Hans C. S. — 1967 — Professor of Geophysics (1982), GI, CNS. Royal Technical University of Denmark '65, M.S.

Noordhoff, Karen J. — 1986 — Instructor of Education (1986), CRA. Northwestern University '69, B.S.; National College of Education '77, M.Ed.

Norcross, Brenda L. — 1989 — Assistant Professor of Marine Science (1989), SFOS/IMS. MacMurray College '71, A.B.; St. Louis University '76, M.S.; College of William and Mary '83, Ph.D.

Norcross, David W. — 1984 — Instructor of Community Health Science (1984), KUC/CRA. University of New Mexico '79, A.S.; Chapman College '84, B.A.

Novak, Donald E. — 1990 — Instructor of Speech Communication (1990), CLA. University of Colorado '76, B.A.; University of Denver '82, M.A.; '86, Ph.D.

Nye, Christopher J. — 1987 — Affiliate Assistant Professor of Geology (1987), CNS. University of Alaska '76, B.S.; '78, M.S.; University of California, Santa Cruz '83, Ph.D.

Oba, Saichi Travis — 1990 — Admissions Counselor (1990), STUAFF. Eastern Oregon State College '85, B.S.

O'Brien, J. Patrick — 1977 — Professor of Economics (1991) and Head, Department of Economics, SOM. Auburn University '67, B.S.; '69, M.S.; Oklahoma State University '77, Ph.D.

Oden, James Michael — 1989 — Safety/Training Officer (1989), VCA. Tarrant County Junior College '78, A.A.S.

Ogbe, David O. — 1984 — Associate Professor of Petroleum Engineering (1990), SME. Louisiana State University '76, B.S.; '78, M.S.; Stanford University '83, Ph.D.

Oien, M. Burton — 1980 — Professor of Accounting Information Systems (1980) and Head, Department of Accounting Information Systems, SOM. University of North Dakota '65, B.S.B.A.; '66, M.S.; North Dakota, '68, C.P.A.; University of Oklahoma '76, Ph.D.

Oien, Sharon — 1981 — Conference Coordinator (1989), C&SE. University of North Dakota '65, B.S.

Olmsted, Coert D. — 1975 — Senior Programmer/Analyst (1980), GI. Harvard '64, B.A.; University of Alaska Fairbanks '88, Ph.D.

Olson, B.G. — 1988 — Instructor, Applied Business, Journalism and Broadcasting, Justice, Independent Learning Program (1988), CRA. University of Wichita '51, B.A.; University of Alaska Fairbanks '66, M.A.; Florida International University '74, J.D.

Olson, John V. — 1979 — Professor of Physics (1983), GI, CNS. University of California, Los Angeles '62, B.A.; '63, M.S.; '70, Ph.D.

Olson, Suzanne S. — 1985 — Medical Technologist, Center for Health and Counseling (1985), STUAFF. University of Wisconsin, Eau Claire '73, B.S.

Olson, Timothy T. — 1982 — Producer, KUAC-TV (1988), CLA.

Opper, Forrest — 1988 — Instructor of Developmental Mathematics, Independent Learning Program (1988), CRA. University of Alaska Fairbanks '74, B.A.

Orchard, Jayna L. — 1978 — Associate Professor of Speech and Theatre (1983), CLA. University of Nevada '72, B.A.; University of California, Davis '76, M.F.A.

Osborne, Daniel L. — 1971 — Project Engineer (1989), GI.

Osterkamp, Joan — 1977 — Executive Officer, Institute of Marine Science (1980), and School of Fisheries and Ocean Sciences (1987), SFOS/IMS. Saint Louis University '64, B.S.; University of Alaska '77, M.B.A.

Osterkamp, Thomas — 1968 — Professor of Physics (1979), GI,CNS. Southern Illinois University '62, B.A.; Saint Louis University '64, M.S.; '68, Ph.D.

Ostermann, Russell D. — 1981 — Acting Dean, School of Mineral Engineering; Associate Professor of Petroleum Engineering (1986), (1989), and Head, Department of Petroleum Engineering (1983), SME. University of Kansas '74, B.S.; '80, Ph.D.

Ostholm, Thomas U. — 1988 — Postdoctoral Fellow (1988), SFOS/IMS. University of Lund '83, B.A.; '88, Ph.D.

Oswood, Mark W. — 1977 — Professor of Aquatic Biology (1990), CNS, IAB. Washington State University '71, B.S.; University of Montana '76, Ph.D.

Owens, Gregory — 1987 — Instructor of Cross-Cultural Communications (1987), CLA. University of Wisconsin '78, B.S.

Pace, Kelley R. — 1986 — Assistant Professor of Business Administration (1986), SOM. College of Idaho '79, B.A.; University of Georgia '85, Ph.D.

Packee, Edmond C. — 1983 — Assistant Professor of Forest Management (1983), SALRM. University of Montana '62, B.S.F.; Yale University '63, M.F.; University of Minnesota '76, Ph.D.

Palmer, Ann — 1980 — Supervisor, Accounts Payable, Budget and Cost Records (1989), VCA. North Seattle Community College '85, A.A.S.

Palmer, Edna — 1991 — Admission Counselor (1991), STUAFF. University of Alaska Fairbanks '89, B.B.A.

Panciera, Michael T. — 1988 — Assistant Professor of Agronomy (1988), SALRM. University of Guelph '77, B.S.; '79, M.S.; Penn State University '82, Ph.D.

Parrett, William H. — 1979 — Professor of Education (1984), CRA. Indiana University '72, B.S.; '73, M.S.; '79, Ph.D.

Pate, Sally — 1985 — Associate Professor of Extension, Home Economics (1985), CES. Concord College '55, B.S.; Central Washington University '74, M.Ed.

Patil, Shirish L. — 1987 — Research Associate (1987), SME. University of Poona '81, B.S.; University of Pittsburgh '83, M.S.; University of Alaska Fairbanks '87, M.S.

Patten, Renee — 1988 — Coordinator, Career and Community Development (1988), KUC/CRA. Otis Art Institute, Parsons School of Design '71, B.F.A; M.F.A.

Paul III, Augustus J. — 1971 — Associate Professor of Marine Science (1989), SFOS/IMS. University of Massachusetts, Amherst '69, B.S.; University of Alaska '73, M.S.; Hokkaido University '87, Ph.D.

Paust, Brian C. — 1979 — Associate Professor of Fisheries (1988), Marine Extension Agent (1979), SFOS/MAP. University of Washington '76, B.S.; University of Alaska '79, M.S.

Pearson, Roger W. — 1976 — Professor of Geography (1991) and Head, Department of Geography (1986), CLA. Illinois State University '63, B.S.; University of Illinois '65, M.S.; '70, Ph.D.

Pelletier, Vincent — 1985 — Assistant Professor of French and Spanish (1985), CLA. Assumption College '69, B.A.; Institut Catholique de Paris '69, Diplome d'Etudes Francaises; Assumption College '71, M.A.T.; University of Wisconsin-Madison '79, Ph.D.

Pender, Dorothy — 1989 — Assistant Professor of Electrical Engineering (1991), SOE. University of Colorado '84, B.S.; Stanford University '85, M.S.; '91, Ph.D.

Pender, John — 1989 — Assistant Professor of Physics (1989), CNS. Stanford University '89, Ph.D.

Pennington, Henry M. — 1975 — Assistant Professor of Fisheries (1983), Marine Extension Agent (1975), SFOS/MAP. Humboldt State University '73, B.S.; '85, M.S.

Perkins Jr., Maynard G. — 1987 — Instructor of General Science (1987), NWC/CRA. University of Alaska Fairbanks '67, B.S.; Colorado State Univesity '72, M.Ed.

Pessel, Garnet — 1987 — Affiliate Assistant Professor of Geology (1987), CNS. California Institute of Technology '60, B.S.; '60, M.S.

Peter, Carolyn — 1988 — Instructor of Education/Coordinator, Ft. Yukon Rural Center (1988), CRA. Kansas State University '62, B.S.; University of Alaska Fairbanks '88, M.Ed.

Peter, Donald — 1983 — Director, Alaska Native Human Resource Development Program (1983), CRA.

Petersen, John K. — 1985 — Laboratory Instructor of Physics (1985), CNS. Bemidji State University '82, B.S.; University of Alaska '85, M.S.

Peterson, Walt — 1983 — Instructor of Welding, SCCE. Red Rocks Community College '79, Certificate

Pfisterer, William R. — 1980 — Teacher Education Office Coordinator, Instructor of Education (1982), CRA. University of Wisconsin '64, B.A.; University of Alaska '80, M.A.

Philip, Betty Anne P. — 1965 — Associate Professor of Chemistry (1983), CNS. Agnes Scott College '52, B.A.; Yale University '54, M.S.; '60, Ph.D.

Philip, Kenelm W. — 1965 — Research Associate in Taxonomy (1975), IAB. Yale University '53, B.S.; '58, M.S.; '63, Ph.D.

Phillips, Gary J. — 1990 — Associate Professor of Developmental Education (1990), SCCE. University of Northern Colorado '70, B.A.; Southern Illinois University at Carbondale '72, M.A.; '80, Ph.D.

Phillips, Jerry V. — 1981 — Fire Captain (1981), VCA.

Phillips, III, John C. — 1988 — Director of Physical Plant (1988), VCA. University of Kentucky '65, B.S.C.E.

Piacenza, Robert J. — 1977 — Professor of Mathematics (1988), CLA. University of Florida '67, B.S.; University of Miami '73, M.S.; '76, Ph.D.

Pierce, Richard A. — 1988 — Professor of History (1988), CLA. University of California, Berkeley '40, B.A.; '52, M.A.; '56, Ph.D.

Pierson, Barbara J. — 1985 — Recruitment Coordinator (1988), SALRM. Montana State University '77, B.S.; '85, M.S.

Ping, Chien Lu — 1982 — Associate Professor of Agronomy (1989), SALRM. Chumg Hsin University, Taiwan '65, B.Sc.; Washington State University '72, M.S.; '76, Ph.D.

Pinney, Peter — 1989 — Instructor of English, Independent Learning Program (1989), CRA. University of Hawaii, B.A.; University of Alaska Fairbanks, M.F.A.

Pitney, Randall — 1985 — Rifle Coach (1985), ATHREC. University of Alaska Fairbanks '72, B.S.

Plumley, F. Gerald — 1988 — Associate Professor of Marine Science (1988), SFOS/IMS. Mars Hill College '73, B.S.; Auburn University '77, M.S.; University of Georgia '83, Ph.D.

Pollard, Marvin E. — 1985 — Assistant Professor of Library Science (1985), LIB. University of Wisconsin-Madison '70, B.A.; Rosary College '73, M.A.L.S.

Pomeroy, Douglas — 1990 — Adjunct Assistant Professor of Psychology and Guidance and Couseling (1990), CRA. Pepperdine University '75, A.A.; Chico State University '77, B.A.; Humbolt State University '80, M.A.; Oregon State University '86, Ph.D.

Possenti, Richard G. — 1966 — Associate Professor of Psychology (1973), CRA. St. Joseph College '51, B.S.; University of Alabama '55, M.A.

Powell, Dory — 1965 — Buyer (1988), VCA.

Powell, Theron — 1989 — Housing Officer (1989), KUC/CRA.

Powers, W. Roger — 1971 — Professor of Anthropology (1991) and Department Head (1990), CLA. Idaho State University '64, B.A.; University of Wisconsin '68, M.S.; '73, Ph.D.

Preston, Diane — 1989 — Counselor, Center for Health and Counseling (1989), STUAFF. University of California, Santa Barbara '70, B.A.; University of Alaska Fairbanks '89, M.A.

Price, Channon P. — 1987 — Assistant Professor of Physics (1987), CNS. California Institute of Technology '76, B.S.; University of California, Santa Barbara '81, Ph.D.

Prichard, Ann — 1988 — Instructor of General Studies (1988), CC/CRA. Arizona State University '69, B.A.; '77, M.S.

Proenza, Luis M. — 1987 — Vice Chancellor for Research and Dean of the Graduate School, Professor of Biology (1987), VCR, CNS. Emory University '65, B.A.; Ohio State University '66, M.A.; University of Minnesota '71, Ph.D.

Pulpan, Hans — 1968 — Associate Professor of Geophysics (1980), GI. Montanistische Hochschule Loeben, Austria '61, Dipl. Eng.; University of Illinois '64, M.S.; '68, Ph.D.

Purser, Jerry — 1975 — Associate Professor of Extension Agriculture Resources Mangement (1982) and Acting Land Resources Chair (1987), CES. North Carolina State University '64, B.S.; '69, M.S.

Quang, Pham X. — 1985 — Associate Professor of Statistics (1990), CLA. University of Saigon '61, B.S.; Western Washington University, Bellingham '71, M.S.; University of California, Berkeley '74, Ph.D.

Quarberg, Donald — 1979 — Associate Professor of Extension, Agricultural Agent (1985), CES. University of Wisconsin '72, B.S.; Texas A&M University '74, M.S.

Quinn II, Terrance J. — 1985 — Associate Professor of Population Dynamics (1985), SFOS/JCFOS. University of Colorado '73, B.A.; University of Washington '77, M.S.; '80, Ph.D.

Raad, Lufti — 1988 — Associate Professor of Civil Engineering (1988), SOE. American University of Beirut '71, B.E.; University of California, Berkeley '72, M.Sc.; '77, Ph.D.

Rafferty, Julie — 1989 — Coordinator, Materials Development and Distribution (1989), CRA. University of Alaska Fairbanks, B.Ed.

Rao, Nagabhushana M.S. — 1970 — Professor of Sociology (1981) CRA. Chairman, Asian Studies (1974). University of Mysore '57, B.A. (Hon.); '58, M.A.; Washington State University '74, Ph.D.

Rao, Pemmasani Dharma — 1966 — Professor of Coal Technology (1976) and Associate Director of MIRL (1985), SME. Andhra University '52, B.Sc.; '54, M.Sc.; Pennsylvania State University '59, M.S.; '61, Ph.D.

Rasmussen, Linda B. — 1986 — Advanced Nurse Practitioner, Center for Health and Counseling (1986), STUAFF. Loyola University of Chicago '80, B.S.N.; Simmons College, Boston '84, M.S.

Rawson, Timothy — 1991 — International Student/Scholar Advisor (1991), STUAFF. Luther College '80, B.A.

Ray, Charles K. — 1957 — Director of Summer Sessions (1982) and Professor of Education, Emeritus (1991). University of Colorado '51, B.A.; Columbia University '55, M.A.; '59, Ed.D.

Read, Colin L. — 1989 — Assistant Professor of Economics (1989), SOM. Capilano College '79, A.A.S.; Simon Fraser University '81, B.S.; School of Graduate Studies and Research, Queen's University '82, M.A.; '88 Ph.D.

Read, Melissa — 1990 — Coordinator for Certification and Advising (1991), CRA. Middlebury College '84, B.A.; Syracuse University '85, M.P.A.; University of Alaska Fairbanks '90, teaching certificate.

Reeburgh, William S. — 1968 — Professor of Marine Science (1977), SFOS/IMS. University of Oklahoma '61, B.S.; Johns Hopkins University '64, M.A.; '67, Ph.D.

Rees, Manfred H. — 1958 — Professor of Geophysics (1975), GI, CNS. West Virginia University '48, B.S.E.E.; University of Colorado '56, M.S.; '58, Ph.D.

Reeve, Karen — 1989 — Program Coordinator, Alaska Drug Abuse Response and Education Program (1989), STUAFF.

Reeve, Winifred A. — 1988 — Coordinator, Community Health Aide Program (1988), CRA. College of St. Scholastica '72, B.A.

Reger, Richard D. — 1975 — Affiliate Associate Professor of Geology (1984), CNS. University of Alaska Fairbanks '63, B.A.; '64, M.S.; Arizona State University '75, Ph.D.

Reichardt, Paul B. — 1972 — Dean, CNS (1991); Professor of Chemistry (1981), CNS. Davidson College '65, B.S.; University of Wisconsin '69, Ph.D.

Reisinger, John W. — 1972 — Chief Engineer, KUAC FM/TV (1980), CLA.

Renecker, Lyle A. — 1990 — Assistant Professor of Animal Science (1990), SALRM. Wilfred Laurier University '74, B.S.; Laurentian University '83, M.S.; University of Alberta '89, Ph.D.

Reynolds, Albin — 1981 — Instructor of Airframe and Powerplant/Aviation Technology, SCCE. State of Alaska, Class D Teaching Certificate.

Reynolds, James B. — 1978 — Associate Professor of Fisheries and Unit Leader, Alaska Cooperative Fishery Research Unit (1978), IAB, SFOS. Utah State University '61, B.S.; Iowa State University '63, M.S.; '66, Ph.D.

Reynolds, Janice McKenna — 1988 — Vice Chancellor for Academic Affairs (1988), VCAA, and Professor of Sociology. Central Michigan '64, B.S.; Ohio State University '67, M.A.; '69, Ph.D.

Riccio, Thomas P. — 1988 — Assistant Professor of Theatre (1988), CLA. Cleveland State University '78, B.A.; Boston University '82, M.F.A.

Rice, Donald D. — 1983 — Systems Analyst (1989), GI. University of Alaska Fairbanks '88, B.S.

Rice, Eileen Lynn — 1988 — Fiscal Officer (1988), SCCE. The Florida State University '71, B.S.; Babcock Graduate School of Management, Wake Forest University '83, M.B.A.

Rice, Michael L. — 1983 — Acting Vice Chancellor for Administration (1991), Dean, School of Management (1983) and Professor of Business Administration (1983), SOM. Florida State University, Tallahassee '71, B.S.; '72, M.B.A.; University of North Carolina, Chapel Hill '75, Ph.D.

Richards, Hugh — 1988 — Instructor of Economics, Independent Learning Program (1988), CRA. Oberlin College '67, B.S.; University of Washington '81, M.F.A.; University of Alaska Fairbanks '87, M.S.

Richmond, Allen P. — 1980 — Research Associate, SALRM (1980). Virginia Polytechnic Institute and State University '72, B.S.

Riley, Joe — 1984 — Producer/Reporter, KUAC-TV (1984), CLA. Furman University '78, B.A.

Riley, Julie — 1984 — Assistant Professor of Extension, Horticulture (1988) and Community Development (1984), CES. University of Wisconsin-Madison '77, B.S.; '80, M.S.

Ritter, John T. — 1990 — Adjunct Research Associate, Alaska Native Language Center (1990), CLA. Michigan State University '66, B.S., B.A.; Massachusetts Institute of Technology '70, A.B.D.

Roberts, Larry N. — 1987 — Coordinator of Tok Center (1987), CRA; Adjunct Assistant Professor of Human Services, Texas Christian University '71, B.A.; '77, M.Ed.

Robertson, Betsy R. — 1969 — Research Associate (1977), SFOS/IMS. Hartwick College '65, B.A.

Robinson, E. Thomas — 1974 — Associate Professor of Accounting Information Systems (1979), SOM. University of Wisconsin '67, B.B.A.; '71, M.S.; C.P.A.; '82, C.M.A.

Robinson, Mitchell R. — 1989 — Graphics Programmer Analyst (1989), GI. University of Alaska Fairbanks '88, B.S.

Roderick, George T. — 1977 — Men's Basketball Coach (1985), ATHREC. Kilgore Junior College '65, A.A.; University of Denver '67, B.A.; '69, M.A.

Roederer, Juan G. — 1977 — Professor of Physics (1977), GI, CNS. University of Buenos Aires '52, Ph.D.

Roem, Andries J. — 1988 — Visiting Assistant Professor of Fisheries (1988), SFOS/JCFOS. University of Agriculture, Wageningen, The Netherlands '82, B.S.; '84, M.S.; Southern Illinois University '88, Ph.D.

Rogers, Samuel I. — 1987 — Associate Professor of Vocational Education (1987), NWC/CRA. Fort Hays Kansas State University '65, B.S.; Pittsburgh State University '71, M.S.; Kansas State University '73, Ph.D.

Rohwer, Celia M. — 1975 — Systems Analyst (1990), GI.

Romberg, Carole J. — 1988 — Underwriting Coordinator, KUAC FM/TV (1988), CLA. University of Alaska '81, B.A.

Roth, Mitchell — 1983 — Associate Professor of Computer Science (1983), CLA. Michigan State University '73, M.S.; University of Illinois '80, Ph.D.

Rounds, Phil — 1985 — Assistant Fire Chief (1986), VCA.

Routley, Anne-Grethe — 1987 — Visiting Assistant Professor of Danish (1987), CLA. University of Copenhagen '86, Cand. Mag.

Rowe, Charlotte A. — 1984 — Seismologist (1989), GI. University of Alaska Fairbanks, M.S.

Royer, Susan B. — 1970 — Assistant Professor of Mathematics (1975), CLA. Salem State College '61, B.S.; Texas A&M University '66, M.S.; '69, M.S.

Royer, Thomas C. — 1969 — Professor of Marine Science (1981), SFOS/IMS. Albion College '63, B.A.; Texas A&M University '66, M.S.; '69, Ph.D.

Rozell, Ruiz Anne — 1976 — Tanana Valley Community College '78, A.A.S.; South Arkansas University '70, B.S.E.; University of Alaska '78, B.T.

Ruess, Diane E. — 1989 — Visiting Assistant Professor of Library Science (1989), LIB. University of North Dakota '75, B.S.; University of Washington '79, M.L.S.

Ruess, Roger W. — 1989 — Assistant Professor of Botany (1989), CNS, IAB. University of California, Irvine '74, B.S.; University of North Dakota '80, Ph.D.

Ruff, Richard G. — 1985 — Director of Programming, KUAC (1988), CLA. West Virginia University '73, A.B.; '79, B.S.

Runcorn, Keith Stanley — 1989 — Professor of Physics and Geophysics (Sydney Chapman Chair in Physical Sciences) (1989), CNS. Manchester '49, Ph.D.; Cambridge '63, Doctor of Science; '65 Fellow of the Royal Society.

Ruppert, James — 1988 — Associate Professor of English and Alaska Native Studies (1991), CLA. State University of New York '70, B.A.; Purdue University '72, M.A.; University of New Mexico '81, Ph.D.

Ruzica, Miroslav — 1990 — Visiting Professor of Social Policy (1990), CRA. University of Belgrade, Yugoslavia '69, B.S.; '78, M.S.; '85, Ph.D.

Sackinger, William M. — 1970 — Associate Professor of Geophysics and Electrical Engineering (1971), GI,CNS. University of Notre Dame '59, B.S.; Cornell University '61, M.S.; '69, Ph.D., P.E.

Saklad, Howard M. — 1982 — Programmer (1983), SFOS/IMS. Boston University '77, B.A.; '78, M.A.

Salzman, Michael — 1990 — Assistant Professor in Guidance and Counseling (1990), CRA. Brooklyn College '68, B.A.; University of Oregon '78, M.A.; University of Arizona '87, Ph.D.

Santoni, Larry — 1988 — Assistant Professor of Mathematics (1988), CLA. Oregon State University '72, B.S.; University of California San Diego '74, M.A.; University of Michigan '88, Ph.D.

Schall, Dennis G. — 1988 — Assistant Professor of Education (1988), CRA. Kearney State College '69, B.S.; '72, M.S.; University of Nebraska '77, Ph.D.

Schamel, Douglas — 1975 — Instructor of Biology (1980), CNS. Allegheny College '71, B.S.; University of Alaska Fairbanks '74, M.S.

Schatz, Madeline — 1990 — Professor of Music and Music Director, Fairbanks Symphony Orchestra (1990), CLA. University of Southern California, B.M.; Indiana University, M.M.; University of Southern California, D.M.A.

Scheaffer, Donald — 1987 — Director of Financial Aid (1987), STUAFF. Cardinal Glennon College '62, B.S.; San Jose State University '78, M.P.A.

Schell, Donald M. — 1976 — Professor of Marine Science and Water Resources (1989), INE, SFOS/IMS. Southeastern Massachusetts University '62, B.S.; University of Alaska '62, M.S.; '71, Ph.D.

Schimel, Joshua — 1989 — Assistant Professor of Biology (1988), CNS. Middlebury College '79, B.A.; University of California-Berkeley '87, Ph.D.

Schmierbach, Glenda — 1987 — Instructor of Developmental Studies (1987), KUC/CRA. North Dakota State University '67, B.A.

Schneider, William S. — 1980 — Associate Professor of Library Science (1987), Curator of Oral History (1980), LIB; Associate Faculty of Anthropology (1987). Franklin and Marshall College '68, B.A.; Bryn Mawr College '72, M.A.; '76, Ph.D.

Schooley, Penny — 1976 — Fiscal Officer (1982), SG/SFOS.

Schroeder, Radene — 1969 — Associate Professor of Office Professions, SCCE. University of North Dakota '67, B.S.; '69, M.S.

Schuldiner, Michael — 1980 — Professor of English (1990), CLA. Goddard College '69, B.A.; Kent State '79, Ph.D.

Schwaegerle, Kent E. — 1986 — Assistant Professor of Botany (1986), CNS, IAB. Oberlin College '75, B.A.; Ohio State University '78, M.S.; University of Illinois '84, Ph.D.

Schwafel, Stanley R. — 1979 — Project Manager, PFRR (1989), GI. Solano College '72, A.A.

Scorup, Peter C. — 1972 — Research Associate (1980), AFES (Palmer Research Center). Colorado State University '66, B.S.

Scott, G. Richard — 1973 — Professor of Anthropology (1986), CLA. Arizona State University, Tempe '68, B.A.; '73, Ph.D.

Sedinger, James Stone — 1985 — Associate Professor of Wildlife Ecology (1990), CNS, IAB. University of Washington, '71, B.S.; University of California, Davis '83, Ph.D.

Seifert, Richard D. — 1973 — Associate Professor of Engineering Extension (1988), CES. West Chester State College '70, B.A.; University of Alaska '73, M.S.

Selinger, Gary M. — 1979 — Collections Manager (1986), UAM. '79, B.A.

Sengupta, Mritunjoy — 1983 — Professor of Mining Engineering (1989), SME. Indian School of Mines '64, B.S.; Columbia University '71, M.S.; '73, M.S.; Colorado School of Mines '82, Ph.D.; P.E.

Seppamaki, Sandra — 1974 — Associate Professor of Applied Business (1990), SCCE. Western Michigan University '72, B.S.; University of Alaska '78, M.Ed.

Severin, Kenneth P. — 1990 — Research Associate (1990), CNS. California Institute of Technology '78, B.S.; University of California Davis '87, Ph.D.

Sfraga, Mike — 1986 — Coordinator for Student Affairs, Off Campus Sites (1989), STUAFF. University of Alaska Fairbanks '84, B.S.; Bowling Green State University '86, M.A.

Shalter, Patricia J. — 1987 — Assistant Professor of Social Work (1987), CRA. Muhlenberg College '61, B.A.; University of Hawaii '63, M.S.W.

Shanis, Daniel S. — 1984 — Program Development Specialist, ANHRDP (1984), CRA. University of Pennsylvania '69, B.A.; University of Northern Colorado '73, M.A.

Sharma, Ghanshyam D. — 1963 — Director, Petroleum Development Laboratory (1984); Professor of Petroleum Engineering (1984); Professor of Marine Science (1969), SME, SFOS. Benares Hindu University '52, B.S.; Swiss Federal Institute of Technology '58, Diploma of Engineering Geology; University of Michigan '61, Ph.D.

Sharratt, Brenton S. — Affiliate Associate Professor of Soil Physics (1986), SALRM. Utah State University '78, B.S.; '80, M.S.; University of Minnesota '84, Ph.D.

Shaw, David C. — 1973 — Professor of Marine Science and Chemistry (1984), SFOS/IMS, CNS. University of California, Los Angeles '67, B.S.; Harvard University '69, A.M.; '71, Ph.D.

Shaw, Diane L. — 1988 — Instructor of Chemistry (1988), CNS. Boston State College '69, B.S.; Boston University '71, M.A.

Shaw, Glenn E. — 1971 — Professor of Geophysics (1981), GI, CNS. Montana State University '63, B.S.; University of Southern California '65, M.S.; University of Arizona '71, Ph.D.

Shelton, Harris W. — 1971 — Vice Chancellor for Student Affairs (1985), STUAFF, Associate Professor of Education, CRA. University of South Florida '65, B.A.; '67, M.A.; Florida State University '71, Ph.D.

Shepro, Kathleen — 1984 — Coordinator, Student Services (1988), CRA.

Shieh, Yeung-Nan — 1984 — Associate Professor of Economics (1986), SOM. National Taiwan University-Taipei '66, B.A.; University of Rochester, New York '76, M.A.; Texas A&M University '80, Ph.D.

Shields, Gerald F. — 1975 — Professor of Zoology (1985), CNS, IAB. Carroll College '66, B.A.; Central Washington State College '70, M.S.; University of Toronto '74, Ph.D.

Shinkwin, Anne D. — 1971 — Dean, College of Liberal Arts and Professor of Anthropology (1985), CLA. University of Connecticut '60, B.A.; George Washington University '64, M.A.; University of Wisconsin '75, Ph.D.

Shirley, Thomas C. — 1986 — Associate Professor of Fisheries (1982), SFOS/JCFOS. Texas A&I University '69, B.S.; '74, M.S.; Louisiana State University '82, Ph.D.

Shuler, Robert J. — 1987 — Associate Professor of Liberal Arts (1987), KUC/CRA. University of Texas '65, B.A.; University of Oregon '71, M.A.

Shumaker, Peggy — 1988 — Associate Professor of English (1990), CLA. University of Arizona, Tucson '79, M.F.A.

Simpson, Glen C. — 1969 — Professor of Art (1985) and Head, Department of Art, CLA. Rochester Institute of Technology '68, B.F.A.; '69, M.F.A.

Singer, Jack — 1982 — Adviser/Counselor, Rural Student Services (1983), STUAFF. Rutgers University '78, B.S.

Sink, Cathy R. — 1980 — Staff Counselor, Center for Health and Counseling, STUAFF, and Assistant Professor of Psychology (1980), CRA. University of California, Los Angeles '74, B.A.; Fuller Graduate School of Psychology '77, M.A.; '79, Ph.D. Licensed Psychologist '82.

Skelton, Irvin — 1984 — Professor of Extension and Acting Director of Cooperative Extension Service (1987), Professor of Agronomy (1984), CES. University of Wyoming '60, B.S.; Colorado State University '70, M.Ed.; '74, Ph.D.

Skelton, Marcele — 1985 — Instructor, Learning Assistance and Developmental Studies (1990), SCCE. University of Nebraska '59, B.S.; University of Maryland '64, M.Ed.; New Mexico State University '80, Ed.S.

Slats, Joe — 1989 — Instructor of Education and Alaska Native Study Coordinator (1990), CRA. University of Alaska Anchorage '77, B.A.; University of Alaska Fairbanks '90, M.Ed.

Slaughter, Charles W. — 1970 — Affiliate Professor of Water Resources (1976), INE. Washington State University '62, B.S.; Colorado State University '68, Ph.D.

Smiley, Scott T. — 1989 — Assistant Professor of Biology (1989), IAB, CNS. University of California, Berkeley '79, B.A.; University of Washington, Seattle '84, M.S.; '86, Ph.D.

Smith, Bruce L. — 1988 — General Manager, KUAC FM/TV; Assistant Professor of Broadcasting; Head, Department of Journalism and Broadcasting (1988), CLA. University of Minnesota '73, B.A.; Miami University of Ohio '74, M.S.; Murray State University '79, M.B.A.

Smith, David M. — 1986 — Professor of Education (1986), CRA; Associate Faculty of Anthropology (1987). Nyack College '56, B.S.; Hartford Seminary Foundation '65, M.A.; Michigan State University '69, Ph.D.

Smith Jr., Donald D. — 1986 — Bilingual/Bicultural Manager (1987), NWC/CRA. Baptist College of Charleston '72, B.B.A.

Smith, Roger W. — 1984 — Professor of Physics (1984), GI,CNS. University of Exeter '63, B.S.; '67, Ph.D.

Smith, Ronald L. — 1968 — Professor of Zoology (1984), CNS, SFOS/IMS. Occidental College '64, B.A.; University of Miami '67, M.S.; '68, Ph.D.

Smith, Thomas D. — 1987 — Acting Assistant Director for Coastal and Marine Operations (1989), SFOS/IMS. U.S. Coast Guard Academy '62, B.S.; American University '71, M.S.

Smith, Thomas E. — 1973 — Affiliate Professor of Mining Geology (1984), CNS. Stanford University '65, M.S.; University of Nevada '71, Ph.D.

Smith, William H. — 1964 — Associate Professor of Library Science (1969), LIB. Iowa State College '58, B.S.; Simmons College '60, M.S.

Smoker, William W. — 1978 — Associate Professor of Fisheries (1985), SFOS/JCFOS. Carleton College '67, B.A.; Oregon State University '70, M.S.; '82, Ph.D.

Sonafrank, G. H. Cole — 1979 — Systems Manager (1988), GI. University of Alaska Fairbanks '87, B.A.

Soos, Frank — 1986 — Assistant Professor of Creative Writing (1986), CLA. Davidson College '72, A.B.; University of Arkansas '81, M.F.A.

Sorenson, Fred E. — 1990 — Assistant Professor of Extension, Land Resources, 4-H & Youth (1990), CES. University of California '74, B.A.; Moss Landing Marine Laboratories '84, M.S.

Soza, Ramona E. — 1988 — Assistant Professor of Alaska Native Studies and Political Science (1988), CLA. Wichita State University '79, B.A.; Washington State University '80, M.A.; University of Washington '88, Ph.D.

Sparck, Lucy — 1987 — Associate Professor of Human Services and Counselor (1987), KUC/CRA. Mary Manse College '67, B.A.; University of Utah '71, M.S.W.

Sparrow, Elena B. — 1987 — Affiliate Associate Professor of Soil Microbiology and Soil Scientist with ASDA-ARS (1987), SALRM. University of the Philippines '62, B.S.; Cornell University '66, M.S.; Colorado State University '73, Ph.D.

Sparrow, Stephen D. — 1981 — Associate Professor of Agronomy (1988), SALRM. North Carolina State University '69, B.S.; Colorado State University '73, M.S.; University of Minnesota '81, Ph.D.

Speck, Robert C. — 1984 — Associate Professor of Geological Engineering (1984), and Head, Department of Mining and Geological Engineering (1986), SME. Franklin and Marshall College '68, A.B.; University of Missouri-Rolla '74, B.S.; '75, M.S.; '79, Ph.D.

Spell, B. David — 1978 — Assistant Professor of Electrical Engineering (1980), SOE. University of Washington '74, B.S.E.E.; 81, M.S.E.E.; P.E.

Sponder, Barry — 1987 — Associate Professor of Education (1987), KUC/CRA. Incarnate Word College '75, B.A.; Adelphi University '77, M.A.; Utah State University '90 Ed.D.

Springer, Alan M. — 1983 — Research Assistant Professor of Marine Science (1990), SFOS/IMS. Colorado College '69, B.A.; University of Alaska '74, M.S.; '88, Ph.D.

Stamnes, Knut — 1988 — Professor of Physics (1988), GI. University of Oslo '69, B.S.; '72, M.S.; University of Colorado '78, Ph.D.

Stanek, Sheryl A. — 1990 — Assistant Professor of Extension, Home Economics (1990), CES. Washington State University '64, B.S.; University of Alaska Anchorage '88, M.E.

Stark, David A. — 1971 — Professor of English (1985), CLA. University of California, Los Angeles '65, B.A.; University of California, Irvine '69, M.F.A.

Stech, David A. — 1972 — Associate Professor of Music (1982), CLA. University of Minnesota '67, B.S.; Ohio State University '69, M.A.; Michigan State University '76, Ph.D.

Steffan, Wallace A. — 1989 — Director of University of Alaska Museum and Professor of Biology (1989), UAM. University of California, Berkeley '61, B.S.; '65, Ph.D.

Steiner, Cynthia K. — 1987 — Assistant to the Dean (1987), SOM. University of Minnesota '80, B.S.; University of Alaska Fairbanks '86, M.B.A.

Steiner, Richard G. — 1983 — Marine Extension Agent (1983), Associate Professor of Fisheries (1989), SFOS/MAP. University of Tennessee '74, B.A.; Oregon State University '79, M.S.

Stephens, Dennis J. — 1978 — Associate Professor of Library Science (1984), LIB. Portland State University '69, B.A.; University of Denver '75, M.A.

Stephens, Sidney — 1985 — Instructor of Education (1985), CRA. California State Polytechnic University '71, B.S.; University of Alaska '85, M.Ed.

Stilkey, Neta Business Manager, GI.

St. Martin, Althea R. — 1987 — Director, Alumni Relations/Executive Director, UAFAA (1989). Western Michigan University '73, B.S.

Stockholm, Helen K. — 1974 — Publications Supervisor (1974), IMS. Lamar University '72, B.A.; Sam Houston University '79, M.A.

Stockholm, Kendall R. — 1974 — Assistant Professor of Criminal and Justice (1985), CLA. Lamar University '71, B.S.; Sam Houston State University '72, M.A.; '84, Ph.D.

Stofer, Wendy — 1987 — Visiting Instructor of Music (1987), CLA. University of Washington, B.M.; University of Michigan, M.M.

Stolzberg, Richard J. — 1978 — Associate Professor of Chemistry (1982), CNS. Tufts University '69, B.S.; Massachusetts Institute of Technology '73, Ph.D.

Stone, David B. — 1966 — Professor of Geophysics (1977), GI, CNS. University of Keele '56, B.A.; University of Newcastle Upon Tyne '63, Ph.D.

Stormer, Jacquelyn K. — 1983 — Editorial Specialist (1986). University of Alaska Fairbanks '89, B.A.

Stortz, Peter J. — 1989 — Assistant Professor of Extension, District 4-H Youth Agent (1989), CES. University of Wisconsin, Stevens Point '76, B.S.; '78, M.S.

Stratton, Marcia — 1980 — Instructor of Speech Communications (1980), CLA. Southern Illinois University, A.B.D.; Wilkes College '78, B.S.; University of North Carolina '79, M.Ed.; Southern Illinois University at Carbondale '90, Ph.D.

Stratton, Russell E. — 1983 — Associate Professor of English (1983), CLA. Princeton University '60, A.B.; University of Southern Mississippi '76, M.A.; '79, Ph.D.

Stricks, James L. — 1972 — Director, Center for Distance Education and Adjunct Instructor of Cross-Cultural Education (1989), CRA. Cornell University '71, B.A.; University of Alaska Fairbanks '74, M.A.T.

Stringer, William J. — 1965 — Associate Professor of Geophysics (1982), GI.CNS. New Mexico State University '62, B.S.; University of Alaska '71, Ph.D.

Strohmaier, Mahla — 1989 — Visiting Instructor of Speech Communication (1989), CLA. University of Alaska Fairbanks '87, B.A.; University of North Texas '88, M.S.

Styers, James — 1982 — Superintendent of Maintenance and Operations (1982), VCA.

Succarieh, Mohamed F. — 1991 — Assistant Professor of Civil Engineering (1991), SOE. Louisiana Institute of Technology '83, B.S.; Clemson University '84, M.S.; Rensselaer Polytechnic Institute '90, Ph.D.

Sugai, Susan F. — 1978 — Postdoctoral Fellow (1986), SFOS/IMS. Oakland University '70, B.A.; University of Washington '75, M.S.; University of Alaska '85, Ph.D.

Summerville, Suzanne — 1978 — Professor of Music (1985), CLA. Randolph-Macon Woman's College '58, A.B.; Vienna Academy of Music '61, Diploma; University of Houston '68, M.M.; Freie Universitat Berlin '77, Dr. phil.

Swanson, Ruthann B. — 1988 — Assistant Professor of Food Science (1988), SALRM. University of North Carolina-Greensboro '77, B.S.; University of Tennessee '81, M.S.; '86, Ph.D.

Swanson, Samuel E. — 1979 — Professor of Geology (1983), and Head, Department of Geology and Geophysics (1987), CNS. University of California, Davis '68, B.S.; '70, M.S.; Stanford University '74, Ph.D.

Sweet, Larry R. — 1966 — Systems Engineer (1987), GI. Washington State University '63, B.S.E.E.; University of Alaska-Fairbanks '72, M.S.

Swift, Daniel W. — 1963 — Professor of Physics (1972), GI, CNS. Haverford College '57, B.A.; Massachusetts Institute of Technology '59, M.S.

Sylvie, Gerda — 1975 — Benefits Coordinator (1987), VCA.

Tanaka, Hiroshi — 1988 — Assistant Professor of Geophysics (1988), GI and Assistant Professor of Physics (1988), CNS. University of Tsukuba '80, B.S.; University of Missouri-Columbia '88, Ph.D.

Tape, Walter — 1982 — Associate Professor of Mathematics (1979), CLA. Princeton University '62, B.A.; University of Michigan '68, Ph.D.

Taylor, John N. — 1982 — Associate Professor of Business Administration (1982); Director, MBA Program (1989)and Head, Department of Business Administration (1990), SOM. U.S. Military Academy '60, B.S.; Air Force Institute of Technology '69, M.S.; George Washington University '75, D.B.A.; University of Utah '76, Post Doctoral

Testa, J. Ward — 1986 — Research Assistant Professor of Marine Science (1990), SFOS/IMS. University of Alaska '75, B.S.; University of Minnesota '82, M.S.; '86, Ph.D.

Thibodeau, Michael — 1988 — Instructor of Music, Independent Learning Program (1988), CRA.

Thomas, Dana L. — 1981 — Associate Professor of Statistics (1987), CLA. University of Alaska '74, B.S.; Oregon State University '78, M.S.; '82, Ph.D.

Thomas, Frances — 1989 — Instructor of Aviation Technology, Independent Learning Program (1989), CRA. University of Oregon '68, B.A.; University of Alaska Fairbanks '86, A.A.

Thomas, Kay L. — 1984 — Adviser/Counselor, Rural Student Services (1984), STUAFF. University of Alaska Fairbanks '83, B.S.

Thomas, Natalie — 1974 — Associate Professor of Extension, Home Economics, CES. University of Maine '65, B.S.; University of Alaska Fairbanks '77, M.Ed.

Thompson, Steven K. — 1984 — Assistant Professor of Statistics (1984), CLA. University of California '70, A.B.; Oregon State University '76, M.S.; '82, Ph.D.

Thompson-Winkler, Sallette — 1988 — Analyst/Programmer (1988), VCA.

Thornsen, Ann E. — 1989 — News and Public Affairs Producer, KUAC-FM (1989) CLA. Indiana State University '82, B.S.

Tilsworth, Timothy — 1970 — Professor of Environmental Quality Engineering and Civil Engineering (1984), SOE. Head, Civil Engineering Department (1990). University of Nebraska '66, B.S.C.E.; '67, M.S.C.E.; University of Kansas '70, Ph.D.; P.E.

Tisdale, Shirley — 1985 — Assistant Professor of Extension, Home Economics (1985), CES. South Dakota State University '58, B.S.; Michigan State University '68, M.A.

Todd, Susan K. — 1990 — Visiting Assistant Professor of Land Planning (1990), SALRM. Bryn Mawr '75, B.A.; University of Michigan '79, M.A.

Tonella, Karla D. — 1982 — Executive Producer, KUAC-FM (1982), CLA.

Tonga, Heather — 1989 — Instructor of Community Health Aid Training, (1989), KUC/CLA. uke University Medical Center '89, B.H.S.

Tremarello, Ann — 1957 — Director of Admissions and Records (1974), STUAFF. University of Alaska '57, B.B.A.

Triplehorn, Don M. — 1969 — Professor of Geology (1977), CNS. Ohio Wesleyan University '56, B.A.; Indiana University '57, M.A.; University of Illinois '61, Ph.D.

Triplehorn, Julia H. — 1979 — Associate Professor of Library Science (1985), GI library. Ohio Wesleyan University '57, B.A.; University of Illinois '60, M.S.L.S.

Trubacz, Joseph — 1990 — Executive Officer, School of Engineering and Institute of Northern Engineering (1990), SOE. University of New Hampshire '81, B.S.; New Hampshire College '83, M.B.A.

Tumeo, Mark A. — 1988 — Assistant Professor of Civil Engineering and Environmental Engineering (1988), SOE. University of Notre Dame '81, B.S.; University of California, Davis '82, M.S.; '88, Ph.D.; P.E.

Turner, Patricia — 1967 — Southern Methodist University '51, B.B.A.; North Texas State University '54, M.B.E.

Van Cleve, Keith — 1967 — Professor of Forestry (Soils) 1976), SALRM. University of Washington '58, B.S.; University of California, Berkeley '60, M.S.; '67, Ph.D.

VanLuchene, Donna — 1987 — Instructor of Office Professions and General Studies (1987), NWC/CRA. Eastern Montana College '71, B.S.; Montana State University '78, M.S.; University of Alaska Anchorage '88, M.Ed.

Van Rhyn, Mark E. — 1981 — Assistant Director of Residence Life for Housing (1989), STUAFF. University of California-Irvine '71, B.A.; University of Alaska Fairbanks '82, M.Ed.

Vandre, Wayne — 1977 — Associate Professor of Extension, Horticulture/Pesticides (1984), CES. University of Wisconsin '68, B.S.; '75, M.S.

Van Stone, Deborah J. — 1986 — Manager, University of Alaska Press (1987), VCR. University of Alaska Fairbanks '86, B.A.

Vicente, Sue — 1974 — Advanced Nurse Practitioner, Center for Health and Counseling (1981), STUAFF. Fort Lewis College '69, B.S.; Miami Valley Hospital School of Nursing '71, R.N.; A.N.P.

Vienneau Jr., Laurence E. — 1989 — Visiting Assistant Professor of Art (1989), CLA. Southeastern Massachusetts University '77, B.F.A.; Southern Illinois University '81, M.F.A.

Villa, Daniel — 1990 — Instructor of Spanish (1990), CLA. University of Alaska '86, B.A.; University of New Mexico '88, M.A.

Wade, Charles S. — 1977 — Associate Professor of Business Education (1987), KUC/CRA. Oregon State University '72, B.S.; University of Alaska Anchorage '83, M.B.A.

Wadlow, Joan K. — 1991 — Chancellor (1991), University of Nebraska '53, B.A.; Fletcher School of Law and Diplomacy '56, M.A.; University of Nebraska '63, Ph.D.

Walker, Cynthia L. — 1977 — Associate Professor of English (1982), CLA. Denison University '70, B.A.; Purdue University '72, M.A.; '74, Ph.D.

Walker, Gerald G. — 1987 — Assistant Professor of Electrical Engineering (1988), SOE. Colorado State University '77, B.S.E.E.; University of Southern California '79, M.S.E.E.; University of Alaska Fairbanks '88, Ph.D.

Wallace, Wesley K. — 1985 — Associate Professor of Geology (1991), CNS. Rice University '72, B.A.; University of Washington '76, M.S.; '81, Ph.D.

Walsh, Daniel E. — 1982 — Instructor of Mineral Processing (1984), SME. University of Alaska '81, B.S.; '85, M.S.; P.E.

Walstad, David L. — 1969 — Director of Engineering, KUAC-FM/TV (1980), CLA.

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.

Warbelow, Arthur W. — 1990 — Assistant Professor of Accounting Information Systems (1990), SOM. University of Alaska Fairbanks '85, M.B.A.; Harvard '91, Ph.D.

Waters, John M. — 1990 — Assistant Professor of Paraprofessional Counseling (1990), SCCE. St. Francis College '74, B.S.; University of Minnesota '78, M.S.W.

Watkins, Brenton J. — 1980 — Professor of Geophysics (1991), GI, CNS. University of Adelaide '68, B.S.; La Trobe University '72, M.S.; University of Alaska '74, Ph.D.

Watts, Keith F. — 1985 — Assistant Professor of Geology (1985), CNS. Utah State University '78, B.S.; University of California '85, Ph.D.

Weeks, Wilford F. — 1986 — Professor of Geophysics (1986), GI, CNS. University of Illinois '51, B.S.; '53, M.S.; University of Chicago '56, Ph.D.

Weflen, Arvid — Assistant Professor of Airframe and Powerplant/Aviation Technology, SCCE. St. Cloud State College '71, B.S.

Weimar, Leonard C. — 1967 — Port Engineer (1980), SFOS/IMS.

Weimer, Daniel R. — 1989 — Research Associate Professor (1989), GI. University of Michigan '77, B.S.; '77, B.S.E.; University of Iowa '83, M.S.; '84, Ph.D.

Weingartner, Thomas J. — 1988 — Postdoctoral Fellow (1988), SFOS/IMS. Cornell University '74, B.S.; University of Alaska '80, M.S.; North Carolina State University '89, Ph.D.

Weller, Gunter E. — 1968 — Professor of Geophysics (1973), GI,CNS. University of Melbourne '62, B.S.; '64, M.S.; '67, Ph.D.

Wells, Deborah H. — 1990 — Director (1990), C&SE. College of Wooster '74, B.A.; College of Arts and Sciences at Plattsburgh '85, M.A.

Wells, W. Tom — 1984 — Associate Professor of Exercise Physiology (1991) and Head, Department of Physical Education (1986), CLA. University of Minnesota '71, B.S.; Indiana University '73, M.S.; '81, P.E.D.

Wendler, Gerd — 1966 — Professor of Geophysics (1982), GI, CNS. University of Innsbruck '64, D. Phil.

Wescott, Eugene — 1958 — Professor of Geophysics (1974), CNS,GI. University of California, Los Angeles '55, B.A.; University of Alaska '60, M.S.; '64, Ph.D.

West, C. Eugene — 1977 — Associate Professor of Library Science (1988), LIB. Dickinson State College '60, B.S.; University of Denver '70, M.S.; University of Alaska '78, M.A.

West, Sharon M. — 1973 — Associate Professor of Library Science (1981) and Head, Library Science Department (1991), LIB. University of Southern Colorado '69, B.S.; University of Denver '70, M.A.

Whalen, Stephen C. — 1979 — Research Associate (1990), SFOS/IMS. University of Maine '74, B.S.; Montana State University '79, M.S.; University of Alaska '86, Ph.D.

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.

Whitehead, John S. — 1978 — Professor of History (1984), CLA. Yale '67, B.A.; '69, M.A.; '71, Ph.D.; University of Cambridge '72, M.A.

Wichmann, Henry — 1986 — Professor of Accounting Information Systems (1986), SOM. University of Denver '62, B.S.; Colorado State College '64, M.A.; University of Northern Colorado '72, Ph.D.

Wiese, Craig S. — 1977 — Business Management Specialist (1981), Associate Professor of Marine Science (1985), MAP. Oregon State University '66, B.S.; '74, M.S.; '76, M.B.A.

Willert, Ann T. — 1989 — Fiscal Officer (1989), KUC/CRA.

Willette, T. Mark — 1986 — Marine Extension Agent, Instructor of Fisheries (1986), MAP. University of Alaska '83, B.S.; '85, M.S.

Williams, David — 1979 — Assistant Director (1989), KUC/CRA. University of Wisconsin '75, B.A.

Williams, Don — 1990 — Project Engineer, Physical Plant (1990), VCA.

Williams, Sarah Fran — 1989 — Senior Purchasing Agent (1989), VCA.

Williamson, Francis S. L. — 1986 — Director, Institute of Arctic Biology and Professor of Biology (1986), IAB. San Diego State University '50, B.S.; University of California-Berkeley '55, M.A.; Johns Hopkins University '68, D.Sc.

Willson, Warrack G. — 1988 — Visiting Associate Professor of Coal Science and Technology (1988), SME. University of Northern Colorado '65, B.A.; University of Wyoming '70, Ph.D.

Wilm, Helga — 1968 — Assistant to the Director (1978), GI.

Wilson, Karen M. — 1988 — Fiscal Analyst (1990), SME. University of Wisconsin Milwaukee '80, B.A.

Wilson, L. Stanley — 1989 — Assistant Professor of Education (1989), CRA. University of Saskatchewan '68, B.A.; University of California '88, Ph.D.

Wilson, Margaret (Peggy) — 1989 — Visiting Assistant Professor of Guidance and Counseling (1989), CRA. University of Saskatchewan '85, B.Ed.; University of California, Santa Barbara '88, M.A.; '89, Ph.D.

Wilson, Rebecca L. — 1988 — Research Associate (1988), SFOS/JCFOS. University of Illinois '82, B.S.; '85, M.S.

Wiltse, Milton A. — 1979 — Affiliate Associate Professor of Geology (1984), CNS. University of Pennsylvania '64, B.S.; Indiana University '66, M.S.; '68, Ph.D.

Windschitl, Paul M. — 1987 — Assistant Professor of Animal Science (1987), SALRM, AFES. South Dakota University '81, B.S.; '83, M.S.; University of Minnesota '86, Ph.D.

Wintersteen, Theodora — 1978 — Associate Professor of Library Science and Librarian (1987), KUC/CRA. Wesleyan University '65, B.A.; Emporia State University '78, M.L.S.

Wood, Margaret K. — 1987 — Director of Bristol Bay Campus (1987), BBC/CRA. University of Washington '59, B.S.; University of Oregon '68, M.S.; '77, Ph.D.

Wolf, Sandy — 1984 — Managing Director, Theatre (1990), CLA. University of Washington '66, B.S.; University of Alaska '86, B.A., M.F.A.

Wooding, Frank — 1970 — Professor of Agronomy (1982), AFES. University of Illinois '63, B.S.; Kansas State University '66, M.S.; '69, Ph.D.

Woodward, Kesler — 1982 — Associate Professor of Art (1988), CLA. Davidson College '73, B.A.; Idaho State University '77, M.F.A.

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.

Worley, Gerald Michael — 1988 — Instructor of Political Science, Independent Learning Program (1988), CRA.

Worley, Joan — 1990 — Assistant Professor of English (1990), CLA. Michigan State University '72, B.A.; Ohio University '76, M.A.; '83, Ph.D.

Wynne, Kathleen M. — 1990 — Visiting Assistant Professor of Fisheries and Marine Extension Agent (1990), SFOS/MAP. University of Idaho '77, B.S.; '81, M.S.

Yarie, John A. — 1978 — Assistant Professor of Silviculture and Forest Soils (1983), SALRM. Forest Soils Laboratory (1978). West Virginia University '71, B.S.; University of Maine '74, M.S.; University of British Columbia '78, Ph.D.

Yauney, Jeffrey P. — 1980 — Workstation/LAN User Svcs Manager (1990), PC&IS. Herkimer County Community College '79, A.A.

Youngberg, Brian L. — 1983 — Research Applications Programmer (1986), PC&IS. Uiversity of Alaska Fairbanks '84, A.A.; '87, B.B.A.

Zach, Howard L. — 1970 — Associate Professor of Business Administration (1974), SOM. Colorado State University '64, B.S.; '66, M.S.

Zarling, John P. — 1976 — Associate Dean, Director of Institute of Northern Engineering (1987), Professor of Mechanical Engineering (1981), SOE, INE. Michigan Technological University '64, B.S.M.E.; '66, M.S.M.E.; '71 Ph.D.E.M., P.E.

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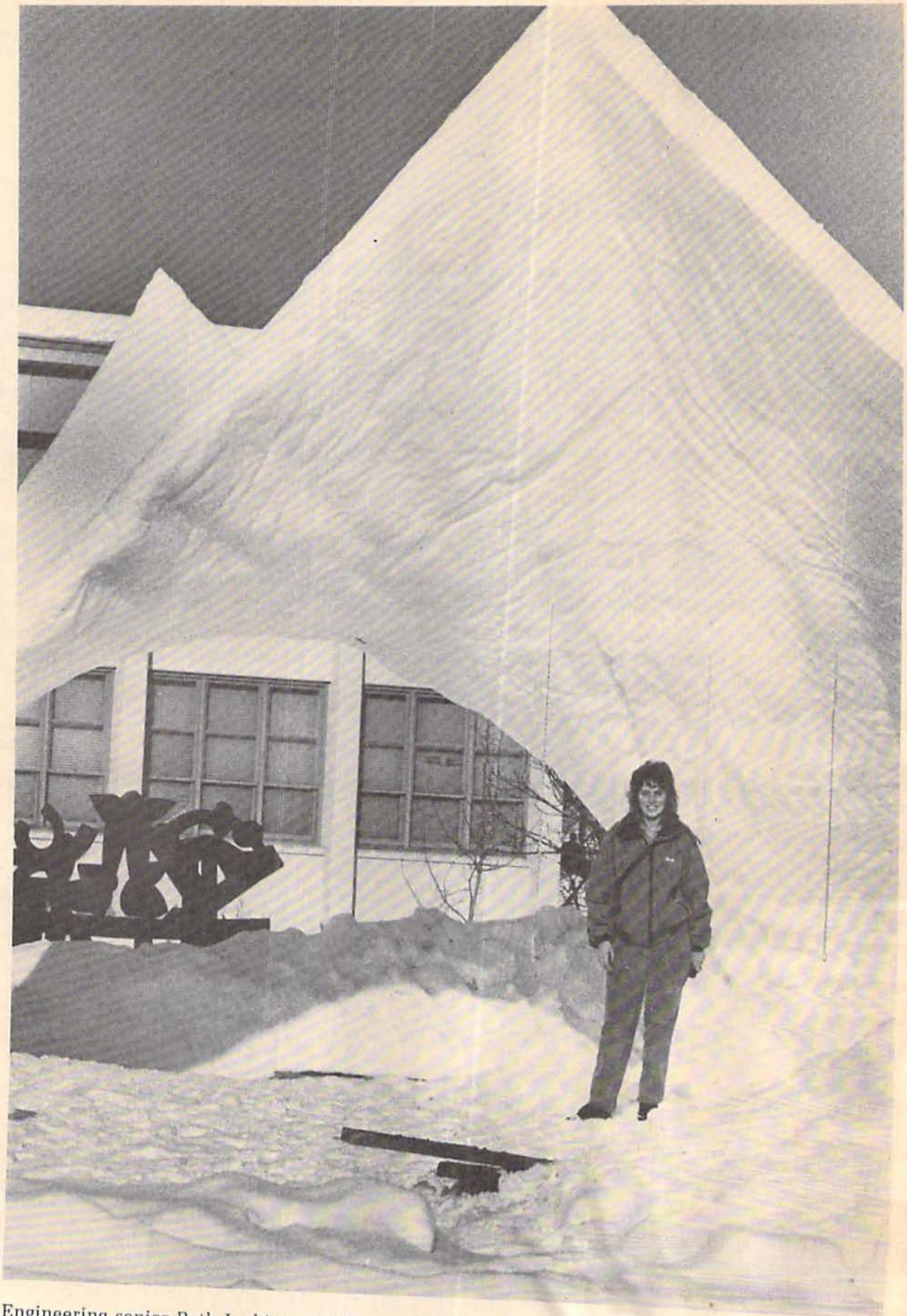
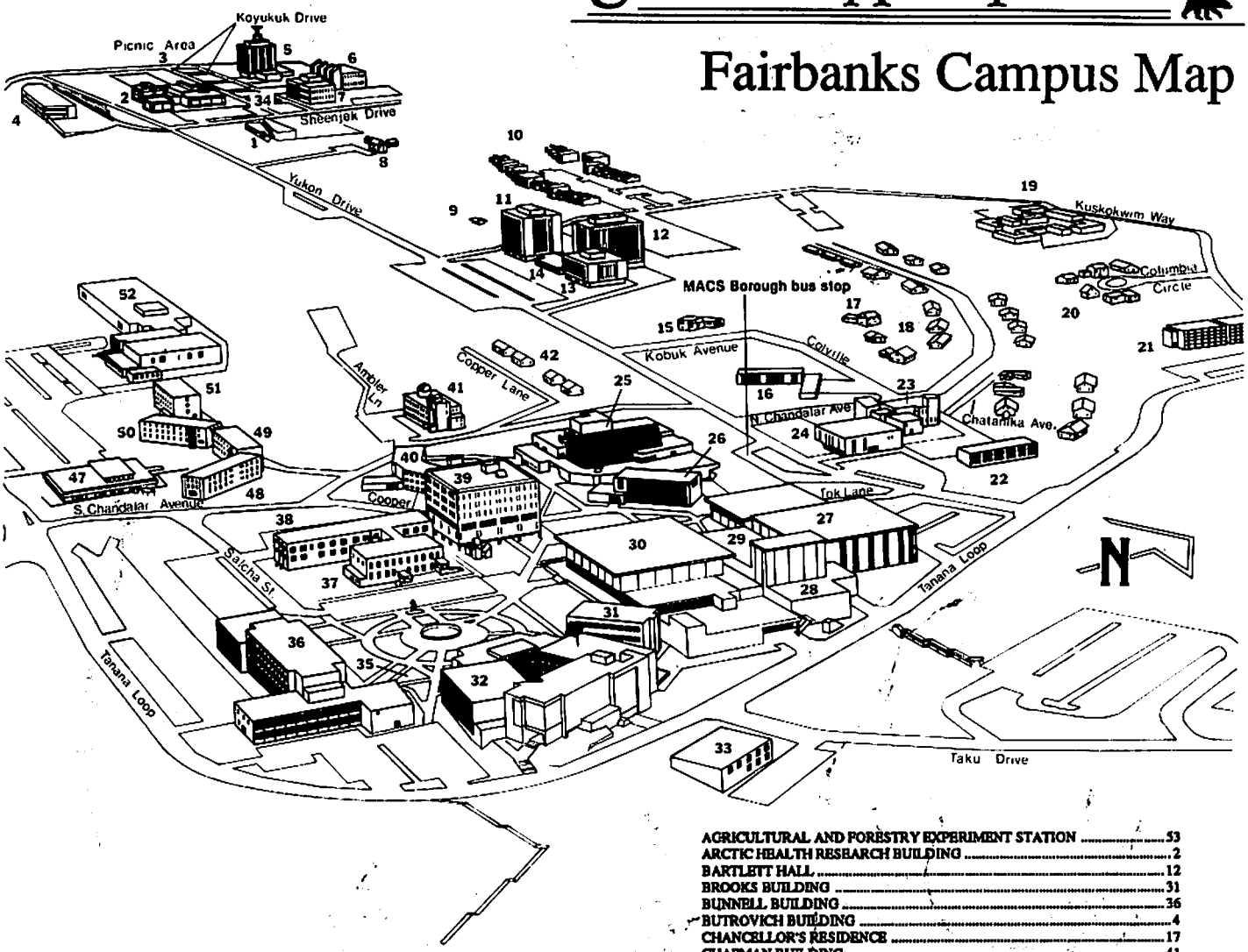


Engineering senior Beth Jenkins proudly stands before the "Hyperbolic Paraboloid" built by UAF engineering students.

UNIVERSITY OF ALASKA FAIRBANKS

Fairbanks Campus Map



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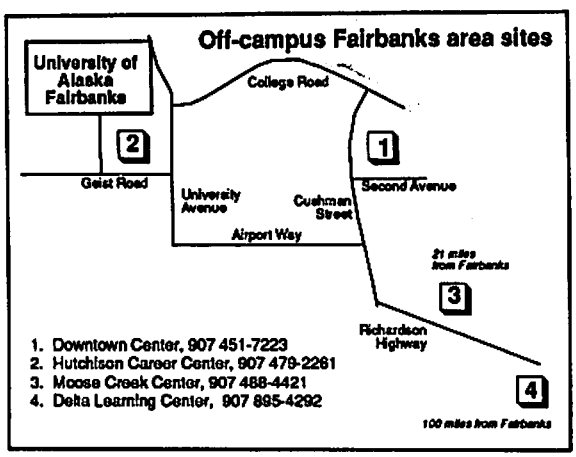
Parking on campus roads and streets is prohibited unless otherwise posted.
A shuttle bus connecting the Lower Campus with West Ridge leaves Wood Center at regular intervals. The center is one of several stops. Schedules can be obtained at Wood Center.



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University of Alaska Fairbanks
Office of Admissions and Records
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